Sunset Empire Transportation District
BOARD OF COMMISSIONERS
BOARD MEETING AGENDA
THURSDAY SEPTEMBER 27, 2018
9:00 AM
Astoria Transit Center, 900 Marine Drive Astoria, OR

AGENDA:

1. CALL TO ORDER; PLEDGE OF ALLEGIANCE
2. ROLL CALL
3. CHANGES TO AGENDA
4. PUBLIC COMMENT (3 minute limit)
5. APPROVAL OF BOARD MEETING MINUTES
6. REPORTS FROM CHAIR AND COMMISSIONERS
7. FINANCIAL REPORTS
8. OLD BUSINESS
    a. TRANSPORTATION ADVISORY COMMITTEE APPOINTMENTS
    b. SEASIDE KIOSK UPDATE
    c. BOARD ASSESSMENT RESULTS
9. NEW BUSINESS
    a. SERVER ISSUES
10. CORRESPONDENCE
11. EXECUTIVE DIRECTOR REPORT
12. LEADERSHIP TEAM REPORTS
13. PUBLIC COMMENT (3 minute limit)
14. OTHER ITEMS

SUNSET EMPIRE TRANSPORTATION DISTRICT
COMMONLY USED ACRONYM LIST
SEPTEMBER
2018

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACT	ACTUAL
ACCTS	ACCOUNTS
ADA	AMERICANS WITH DISABILITIES ACT
ADS	ADVERTISEMENTS
AP	ACCOUNTS PAYABLE
APTA	AMERICAN PUBLIC TRANSPORATION ASSOCIATION
AR	ACCOUNTS RECEIVABLE
ASC	ASTORIA SENIOR CENTER
BG	BACKGROUND
BLDGING	BUILDING
BOC	BOARD OF COMMISSIONERS
BS	BALANCE SHEET
BUS REG FEE	BUS REGISTRATION FEE
CCC	CLASTOP COMMUNITY COLLEGE
CCCHD	CLATSOP CARE CENTER HEALTH DISTRICT
CCO	COORDINATED CARE ORGANIZATION
CK	CHECK
COMP	COMPUTER
CONF	CONFERENCE
CPCCO	COLUMBIA PACIFIC COORDINATED CARE ORGANIZATION
CRS	CLATSOP REHABILITATION SERVICES
CSR	CUSTOMER SERVICE REPRESENTATIVE
CTAA	COMMUNITY TRANSPORTATION ASSOCIATION OF AMERICA
CTE	CENTER FOR TRANSPORTATION AND THE ENVIRONMENT
DHS	DEPARTMENT OF HUMAN SERVICES
DIST	DISTRICT
DLSM	DRIVE LESS SAVE MORE
DMAP	DIVISION OF MEDICAL ASSISTANCE PROGRAM
DOJ	DEPARTMENT OF JUSTICE
DOT	DEPARTMENT OF TRANSPORTATION
EQUIP	EQUIPMENT
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FTA	FEDERAL TRANSIT ADMINISTRATION
GF	GENERAL FUND
HR	HUMAN RESOURCES
IGA	INTERGOVERNMENTAL AGREEMENT
INFO	INFORMATION
INT	INTEREST
IS	INCOME STATEMENT
ISN	INTEGRATED NETWORK SYSTEM
IT	INFORMATION TECHNOLOGY
LGIP	LOCAL GOVERNMENT INVESTMENT POOL

LGPI	LOCAL GOVERNMENT PERSONNEL INSTITUTE
LRCTP	LONG RANGE COMPREHENSIVE TRANSPORTATION PLAN
MAINT	MAINTENANCE
MBRC	MILES BETWEEN ROAD CALLS
MISC	MISCELLANEOUS
MOS	MONTH
MOU	MEMORANDUM OF UNDERSTANDING
NADTC	NATIONAL AGING AND DISABILITY TRANSPORTATION CENTER
NEMT	NON-EMERGENT MEDICAL TRANSPORTATION
NRTAP	NATIONAL RURAL TRANSIT ASSISTANCE PROGRAM
NTI	NATIONAL TRANSIT INSTITUTE
NWACT	NORTHWEST AREA COMMISSION ON TRANSPORTATION
NWOTA	NORTHWEST OREGON TRANSIT ALLIANCE
NWRC	NORTHWEST RIDE CENTER (NOW KNOWN AS RIDECARE)
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OHA	OREGON HEALTH AUTHORITY
OHP	OREGON HEALTH PLAN
OPTC	OREGON PUBLIC TRANSPORTATION CONFERENCE
OPTIS	OREGON PUBLIC TRANSIT INFORMATION SYSTEM
OR	OREGON
OTA	OREGON TRANSIT ASSOCIATION
OTC	OREGON TRANSPORTATION COMMISSION
P&L	PROFIT AND LOSS
PARA	PARA-TRANSIT
PCA	PERSONAL CARE ATTENDANT
PTAC	PUBLIC TRANSPORTATION ADVISORY COMMITTEE
QTR	QUARTER
RAC	RULES ADVISORY COMMITTEE
RAC	RIDECARE ADVISORY COMMITTEE
RC	RIDECARE
REHAB	REHABILITATION
RFP	REQUEST FOR PROPOSALS
RFQ	REQUEST FOR QUOTES
RIBTC	RURAL AND INTERCITY BUS TRANSPORTATION CONFERENCE
RPTD	RAIL AND PUBLIC TRANSIT DIVISION
SDAC	SENIOR AND DISABLED ADVISORY COMMITTEE (ALSO KNOWN AS S&D)
SDAO	SPECIAL DISTRICTS ASSOCIATION OF OREGON
SDIS	SPECIAL DISTRICTS INSURANCE SERVICES
SETD	SUNSET EMPIRE TRANSPORTATION DISTRICT
SETD GF	SUNSET EMPIRE TRANSPORTATION DISTRICT GENERAL FUND
SETD GEN	SUNSET EMPIRE TRANSPORTATION DISTRICT GENERAL FUND
SIP	SERVICE IMPROVEMENT PROGRAM
SSP/0401	ACCOUNT FROM OREGON DEPARTMENT OF HUMAN SERVICES

SUNSET EMPIRE TRANSPORTATION DISTRICT
COMMONLY USED ACRONYM LIST
SEPTEMBER
2018

STF	SPECIAL TRANSPORTATION FUND
STIF	STATEWIDE TRANSPORTATION IMPROVEMENT FUND
STIP	SPECIAL TRANSPORTATION IMPROVEMENT PROGRAM
STP	SURFACE TRANSPORTATION PROGRAM
STS	SUNSET TRANSPORTATION SERVICES (NAME CHANGE THAT DIDN'T HAPPEN)
TAC	TECHNICAL ADVISORY COMMITTEE
TAC	TRANSPORTATION ADVISORY COMMITTEE
TECH	TECHNOLOGY
TGM	TRANSPORTATION GRANTS MANAGEMENT
TO	TRANSPORTATION OPTIONS
TPAC	TRANSPORTATION PLAN ADVISORY COMMITTEE
TPJCC	TONGUE POINT JOB CORPS CENTER
TRB	TRANSPORTATION RESEARCH BOARD
TSP	TRANSPORTATION SYSTEMS PLAN
YTD	YEAR TO DATE
ZEP	ZERO EMISSION PROPULSION
ZEBRA	ZERO EMISSION BUS RESOURCE ALLIANCE

SUNSET EMPIRE TRANSPORTATION DISTRICT

BOARD OF COMMISSIONERS
BOARD MEETING MINUTES
August 23, 2018

DRAFT

1. CALL TO ORDER- Chair Kathy Kleczek called the meeting to order at 9:00 AM
2. ROLL CALL:

   Present: Chair Kathy Kleczek, Commissioner Kevin Widener, Vice Chair Bryan Kidder, Commissioner Pamela Alegria, Commissioner Tracy MacDonald and Commissioner Carol Gearin. Secretary/Treasurer Lylla Gaebel was excused.
   Staff Present: Executive Director Jeff Hazen, Finance Officer Tracy Lofstrom, Chief Operating Officer, Paul Lewicki, Human Resources Tami Carlson, Transit Center Manager John Layton, Executive Assistant Mary Parker

3. CHANGES TO AGENDA- Executive Director Hazen requested delaying the Transportation Advisory Committee Appointments until the September Board Meeting.
   Commissioner Kidder moved to accept the Agenda as amended
   Commissioner Gearin seconded
   Motion passed unanimously

4. PUBLIC COMMENT- None

5. APPROVAL OF July 26, 2018 BOARD MEETING MINUTES-
   Commissioner Gearin moved to approve the July 26, 2018 Board Minutes
   Commissioner Widener seconded the motion
   Discussion- Correction page 11 paragraph f. change "Commissioner Gearin commented" to "Commissioner Gaebel commented". Page 6 # 9.c add apostrophe to Board's and align paragraph page 11.
   Commissioner Gearin moved to approve minutes as corrected
   Commissioner MacDonald seconded to approve minutes as corrected.
   Motion passed unanimously

6. REPORTS FROM CHAIR AND COMMISSIONERS
   a. Commissioner Alegria- No Report
   b. Commissioner Widener- Reported that it has come to his attention that a member of the Board has been in discussion with one of our drivers and has taken a stand on the union and he feels this is inappropriate.
   c. Commissioner MacDonald- Reported there may be an area for bus parking in land across from the Gearhart school. He also reported that the new bus shelter was being put up at the Gearhart Dollar General store.
   d. Commissioner Gearin- No Report
   e. Commissioner Kidder- Reported he has had people ask him about the big white bus and the lack of signage on buses. He said he would like to hear in the future about unifying signage on buses, shelters and SETD property.
   f. Chair Kleczek- Reported about the opportunities for the public to give input on all aspects of tourism at the North Coast Tourism Summit being put on by Travel Oregon on September 25th which is followed by several other networking workshops and events being held over the next several months. More information and workshop schedules can be seen on the Travel Oregon website and will be posted in several locations.

7. FINANCIAL REPORTS- Financial Officer Tracy Lofstrom reviewed the July Financials and Exceptions reports. Executive Director Hazen said Tracy has added an area at the bottom of the Exceptions Report that will contain responses to questions from the previous Board Meeting. Personnel services had not been updated and was changed to $5995. There will still be a little more coming in from RideCare but it is dwindling down and probably will not have much to talk about after October.

    Commissioner Gearin moved to accept the July 2018 Financials as presented
    Commissioner Widener seconded the motion
    Discussion- None
    Motion passed unanimously

8. OLD BUSINESS-

    a. SDAO Legislative Issues- Executive Director Hazen reported that he had talked with the legislative representative at SDAO and that there has not been any new urban renewal legislation for Special Districts since 2009, however there currently is a legislative group working on enhancing what was passed in 2009. Executive Director Hazen also said if there is a renewal of an urban renewal project they must get approval from us to support it or not. Executive Director Hazen said he changed the letter to Senator Johnson removing the reference to the 2017 legislative session. Commissioner Gearin asked if there was a way to bring the Special Districts together, so they are all aware. Chair Kleczek said she would like to see it stated more strongly that legislation is very lax as far as what the requirements are for including Special Districts. Commissioner Kidder suggested setting up a phone call with Senator Johnson. Executive Director Hazen said he had planned on setting up a meeting with her soon. Commissioner Gearin suggested that SETD schedule a meet and greet with other Special Districts in the area, so everyone could get to know each other and the issues and requirements concerning urban renewal.

        Commissioner Gearin move to accept the letter with the suggestions added by the Board and that the Board Chair sign it
        Commissioner MacDonald seconded the motion
        Discussion-Commissioner Gearin requested that a final copy of the letter be sent to the Board. Chair Kleczek reminded the Board that there could not be any discussion of the letter between the Board members.
        Motion passed unanimously

    b. Seaside Kiosk Relocation Update-Executive Director Hazen said he wanted to give a shout out to Debbie Bauer as she is friends with the owners of the Daisy Mae Sandwich shop which is located at the Seaside Outlet mall. Debbie discussed our need to move the Transit Kiosk with them and they offered to carve out an area in the front of their store for our Kiosk. Executive Director Hazen said he met with the owners and all are waiting to hear back from the mall management and leasing agent. Executive Director Hazen said this will only be a temporary solution as we look at other options.

        Commissioner MacDonald moved to support the Seaside Kiosk and staff moving forward with this option and allow the lease negotiations.
        Commissioner Gearin seconded the motion
        Discussion- Commissioner Kidder asked how this satisfies the access to the main highway with the buses getting in and out, does it satisfy all those things and is there a crosswalk for foot traffic? Executive Hazen said the buses pull in across the street and there will be no change in routes or access to the highway and there is a crosswalk to access the mall from the bus stop.
        Motion passed unanimously

    c. Transit App Statistics- Chief Operating Officer, Paul Lewicki distributed a report to the Board on the data from the Transit App for the last 4 weeks which included Portland, Columbia County and

Tillamook County data because they are also in the same GTSF feed from Trillium. Paul explained the details of the report. Paul said these things do not necessarily show what we were looking to get from the App but they show relationships and trends from the area. There were 12,000 views and 1400 clicks on SETD Routes. Chair Kleczek asked if the app posters were still being posted. Mary said the shelter location posters and app information posters were posted in all shelters, but she would make sure.

10:00 Chair Kleczek requested taking a 5-minute break
10:06 Meeting was called back into session

d. Follow Up On Job Titles and Descriptions from Last Meeting- Executive Director Hazen said since he had put together the Board Pack for today's meeting, Commissioner Gearin had called George Dunkel at SDAO about the Board's responsibility with Job Titles and descriptions. Commissioner Gearin said for the record she was confused about what she read in July Board minutes, so she called George Dunkel for clarification. George said Job Descriptions are Policy and the Board is responsible for setting Policy. The Board authorizes job descriptions and salary range. The Executive Director or CEO can write job descriptions but the Board votes to adopt them. Executive Director Hazen said he also contacted George Dunkel and George indicated if there is a cost involved the Board should be involved. Hazen said obviously if we have a new position, part of getting approval for the new position would be getting Board approval of the job description. If there is a financial aspect, the Board needs to be involved to approve that. Executive Director Hazen said looking at the cover memo in the packet, at the City of Astoria the Board approves any new job descriptions and then any changes to the job descriptions are administrative which Executive Director Hazen said he would lean towards as a recommendation unless there is a cost involved or there is an impact such as moving the position to a different scale. There was further Board discussion about the Board's involvement in job descriptions.
Executive Director Hazen suggested that the motion include that the Executive Director is responsible for writing job descriptions and the Board will approve all new job descriptions and any changes to job descriptions that have a financial impact on the District.
Commissioner Alegria asked if that statement could be cleaned up a bit for the motion.
Commissioner Widener said this is the redefining of the position that Executive Director Hazen is in now. Commissioner Gearin asked that Mary write out the motion.

Commissioner Kidder requested a 5-minute recess for Mary to write the motion at 10:21 AM
Meeting called back to order at 10: 27 AM

Commissioner Gearin moved that the Executive Director is responsible for writing job descriptions and the Board will approve any new job descriptions and changes to job descriptions that have a financial impact on the District.
Commissioner MacDonald seconded the motion
Motion passed unanimously

9. NEW BUSINESS

a. Enterprise Zone Boundary Amendment- Executive Director Hazen reviewed the letter the District received from CEDR regarding a proposed amendment to increase the Clatsop Enterprise Zone boundary by 2.2 square miles. The letter explains what Enterprise Zones are and the intention of the expansion. This has a potential impact on property tax revenues for taxing agencies, so they are required to seek comments and questions from the taxing agencies in the affected expansion areas which is due on August 30th. Executive Director Hazen said he will include the Board concerns in a response letter.

Commissioner Gearin said she was claiming a potential conflict of interest because Dick Delphia owns property near the Port of Astoria. The Board discussed their concerns about the impact the Enterprise Zone would have on the District. It was clarified that only new property and new buildings will be affected. Executive Director Hazen said the letter states that the Board is welcome to submit written comments. Chair Kleczek said the comments she has heard from the Board so far have been questioning the value that we would see as a District, clarity of the actual zone, how much would be impacted, increased demand for service with less revenue, employee housing and the number of employees. Commissioner Gearin commented that Kevin Leahy had sent a copy of the letter to SDAO and requested that Executive Director Hazen also send a copy of the letter with Board concerns to SDAO. Chair Kleczek pointed out the upcoming government meetings that are listed in the letter. Executive Director Hazen said the Board could designate someone from the Board to go to these meetings and voice their concerns. Vice Chair Kidder asked if we could authorize Executive Director Hazen to go to the meetings and express the Boards concerns. Executive Director Hazen said he could read the completed letter at the meetings. Chair Kleczek asked if the Board agreed to authorize the Executive Director to read the completed letter at the upcoming meetings and have the Board Chair Kleczek or Vice Chair Kidder review the letter before sending. The Board agreed.

10. CORRESPONDENCE- Chair Kleczek read a letter of appreciation from the Oregon Transportation Commission thanking Executive Director Hazen for addressing them about the NWACT. Executive Director Hazen read a thank you email from a family who complimented SETD driver Penny Miller who had helped them safely get from Rainier to the Warrenton KOA for a camping weekend. Paul will make sure Penny is recognized for this.

11. EXECUTIVE DIRECTOR REPORT- Executive Director Hazen reviewed his monthly report and added an update informing the Board that the IGA with Columbia County for the Intercity Grant that the Board approved last year and was delivered to Columbia County was never signed by them and cannot be located. Columbia County has been reimbursing SETD up to this point, but we have also found that the budget they have is not correct and now there are no funds left in the grant. Executive Director Hazen explained SETD wants to continue the Columbia Connector route and estimates the cost to SETD will be $100,000 to operate it until the end of the fiscal year which he said we will be able to do. Executive Director Hazen said we are going to continue discussions on possible changes to the route depending on what is the best solution for all. Chair Kleczek asked if Columbia County will have to pay back some of the Grant since they have misappropriated the funds. Executive Director Hazen said the Grant was split equally and both of us have spent our half of the budget which should have been spread out over a 2-year budget. Executive Director Hazen said he will keep the Board updated and will set up a better system of getting copies of agreements completed, copied and returned for our records. Commissioner Alegria asked why the Transportation Advisory Committee (TAC) appointments were delayed. Executive Director Hazen said we had missed notifying the applicants in time to attend this meeting but will notify and have the applicants at the September Board Meeting. Executive Director Hazen said he is proposing that the TAC move from 7 members to 14 members and asked the Board to consider this before the next meeting. Commissioner Alegria said as a transit user she does not considers bus shelters as amenities but considers them infrastructure and requests this is changed. Executive Director Hazen will look into this.

12. LEADERSHIP REPORTS-Reports submitted for July 2018: Operations- Paul Lewicki, Rider Reports- John Layton, Ride Assist- Jennifer Geisler, Marketing and Outreach- Mary Parker, RideCare- Jason Jones, Human Resources-Tami Carlson and Transportation Options- Matthew Weintraub.

13. PUBLIC COMMENT-None

Chair Kleczek called a 5-minute break at 11:30 AM
Chair Kleczek called meeting back to order at 11:40 AM

14. SDAO BOARD BEST PRACTICES SELF ASSESSMENT – Rob Mills a consultant from SDAO led the Board through a 90-minute self-assessment. Rob explained that he will collect data from the Board and then prepare a summarized report that he will send back. Rob said once you have received the final report, there will be a requirement that the Board reviews the report at the next Board meeting and starts planning for your improvements. Rob said that the Board participated in an assessment in 2015 and copies of the previous assessment will be given to the Board following today's assessment.

Meeting was adjourned at 1:00 PM Mary Parker, Recording Secretary

_____ Date_____
Secretary Treasurer Lylla Gaebel

An audio recording of the Sunset Empire Transportation District's Board Meeting is available at: www.ridethebus.org-Board of Commissioners- Monthly Meeting Minutes- August 2018.

Mission Statement
Provide safe, reliable, relevant and sustainable transportation services to Clatsop County with professionalism, integrity and courtesy.

Sunset Empire Transportation District

AUGUST FINANCIAL EXCEPTIONS & INFORMATION REPORT

For the September 2018 Board of Commissioner's Meeting

NOTE on Reviewing Financials: Month 2 = 16.67 % of Fiscal Year Budget*

Preliminary General Fund Profit and Loss

The District's General Fund Total Year to Date (YTD) Income was $412,605 ($237,102 more than budget), 14% of annual budget and 235% of monthly budget. YTD Total Materials & Services was $155,852 ($12,921 more than budget), 17% of annual budget and 109% of monthly budget.

Revenue

- 4000 Fares: Revenues for the month were $22,847 - $906 more than the monthly budget, $6,678 less than annual budget.
- 4015 Paratransit Fares: Revenues for the month were $7,003 - $2,719 more than the monthly budget and $2,657 more than annual budget.
- 4100 Contract Service-IGA: Received Cannon Beach payment and IC for total of $33,962.
- 4205 Property Taxes: $9,567 was received on 8/6/18 and $170 was received on 8/26/18 US Fish/Wildlife.
- 4250 Timber Sales: $111,934 was received on 8/22/18.
- 4271 Billboard Lease: Payment of $1200 was received in January 2018.
- 4272 Parking: All parking spaces are leased out.
- 4273 Charging Station: Payment of $343.75 was received on June 5, 2018
- 4300 Interest: June interest for General Fund was $774.
- 4310 Misc. Income: $21 for laminating.
- 5000 Grants: Grant reimbursements received for Q4 in the amount of $152,713.

Expense

- 6005 Salaries & Wages: Over budget for the month $10,089 and YTD by $16,065.
- 7000 RC Provider Payments: All Veteran provider rides. Actual for August was $374.
- 8031 Website/On-line SW Sub: $422 for email accounts, All Data annual $1500 and QuickBooks annual subscription $3250.
- 8035 Conf Training & Travel: FTA Real Estate Training-Seattle and Transit Seminar. Under budget YTD by $20.
- 8045 Drug/Alcohol/BG Checks: Random checks and pre-employment checks. Over budget YTD $382.
- 8053 IGA – Dues and Fees: $3000 for quarter.
- 8095 Legal Council: Services for August, over budget YTD by $4,323.
- 8100 Meeting Expense: Refreshments for Board Meeting, ED Evaluation and Driver Meeting.
- 8130 Payroll Processing Fees: $435 for initial setup fee with GNSA.

***Disclaimer: The percentage of the year's budget cited above is just to be used as a basic benchmark for the fiscal year. Individual budget line items will vary based on expenditure time cycles. Items such as Fuel, Wages, & Bldg. Grounds and Maintenance are more consistent on a monthly basis and can be used to gauge against the percentage. However, other items such as Insurance and Legal Counsel have irregular payment cycles and therefore are not as good to judge against the percentage.**

SETD Expense con't

- 8139 Professional Services: July and August – Hauer's Security. Over YTD budget by $2812.
- 8155 Telephone/Internet Service: August and September ($3776.81) paid in August. Over budget YTD by $2539 will smooth out in September. Actual August expense $3,746.52 and YTD $7762.60.
- 8170 Vehicle Maint & Repairs: Several large expenses for repair; $8,528 engine repair for #21, $3954 for misc repairs and air compressor for #77, $3184 for A/C repair #76 and $2275 for tires.
- END

Ride Care Fund Profit and Loss

Ride Care's (RC) total income is -58% of total budget. YTD revenues of $343,807 is $102,742 less than budgeted. YTD Interest Income of $292. Materials & Services of $358,755 are $98,804 less than budget and are 152% of YTD budget.

Revenue

- 4300 Interest: Interest earned was $292.
- 4500 RC Provider Service Reimbursement: DMAP payments have been received in the amount of $4,644.
- 4550 RC CCO Settlement Reimbursement: The true-up for June $70,087 and July $38,231 was received August 29th.

Expense

- 6005 Salaries and Wages: Over budget $6,033 YTD.
- 7000 Contract Providers: Major providers include K &M $18,735 - Wapato $18,884 - Ryan $5,895 - Tillamook $31,959 – Hot Shot $7,149. Gas Vouchers accounted for $29,677. Provider payments is under budget by $101,956 YTD.
- 7030 Bus Passes: $70 for two passes for Tillamook and Columbia County.
- 8070 Employee Recognition: Lunch for remaining RC employees.
- END

Follow up items:

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Sunset Empire Transportation District
Profit & Loss Budget Performance-SETD
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
Ordinary Income/Expense					Better		
Income					**(Worse)**		
4000 FARES	22,847.43	21,941.00	38,088.59	44,767.00	**(6,678.41)**	228,600.00	17%
4015 PARATRANSIT FARES	7,003.00	4,284.00	11,225.00	8,568.00	2,657.00	51,400.00	22%
4090 DONATIONS/COMMISSIONS	2,201.70	1,862.00	2,246.65	2,606.00	**(359.35)**	16,100.00	14%
4100 CONTRACTED SERVICES-IGA	33,962.00	10,834.00	33,962.00	21,668.00	12,294.00	130,000.00	26%
4200 TAXES							
4205 PROPERTY TAXES	7,138.26	0.00	15,083.23	0.00	15,083.23	940,000.00	2%
4207 PRIOR YR PROPERTY TAX	2,428.78	2,319.00	4,384.18	2,319.00	2,065.18	22,000.00	20%
4210 LAND SALES	0.00	0.00	0.00	0.00	0.00	0.00	
4215 US FISH & WILDLIFE	170.04	0.00	170.04	0.00	170.04	0.00	
Total 4200 TAXES	9,737.08	2,319.00	19,637.45	2,319.00	17,318.45	962,000.00	2%
4250 TIMBER SALES	111,933.93	77,182.00	111,933.93	77,182.00	34,751.93	220,000.00	51%
4260 MASS TRANSIT ASSESSMENT	0.00	0.00	16,477.00	15,633.00	844.00	70,000.00	24%
4270 RENTAL INCOME					-		
4271 BILLBOARD LEASE	0.00	0.00	0.00	0.00	0.00	1,200.00	0%
4272 PARKING SPACES	760.00	760.00	1,520.00	1,420.00	100.00	9,020.00	17%
4273 CHARGING STATION	0.00	0.00	0.00	0.00	0.00	280.00	0%
Total 4270 RENTAL INCOME	760.00	760.00	1,520.00	1,420.00	100.00	10,500.00	14%
4300 INTEREST	773.53	675.00	1,459.16	1,340.00	119.16	8,000.00	18%
4310 MISC INCOME	21.00	0.00	32.00	0.00	32.00	0.00	
4500 RC PROVIDER SERVICE REIM	0.00	0.00	0.00	0.00	0.00	0.00	
5000 GRANTS					0.00		
5001 ODOT GRANTS					0.00		
5002 5311 GRANT OPERATIONS	91,528.00	0.00	91,528.00	0.00	91,528.00	455,657.00	20%
5003 5310 MOBILITY MGT GRANT	6,783.00	0.00	6,783.00	0.00	6,783.00	44,630.00	15%
5004 5310 PREV MAINT GRANT	16,177.00	0.00	16,177.00	0.00	16,177.00	115,976.00	14%
5005 5339 CAPITAL PURCH GRANT	17,949.00	0.00	17,949.00	0.00	17,949.00	174,250.00	10%
5006 TRANS OPTIONS DR LESS CON	18,879.00	0.00	18,879.00	0.00	18,879.00	86,577.00	22%
5050 STP CAPITAL	0.00	0.00	0.00	0.00	0.00	457,623.00	0%

Sunset Empire Transportation District
Profit & Loss Budget Performance-SETD
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
5001 ODOT GRANTS - Other	1,397.00	0.00	1,397.00	0.00	1,397.00	0.00	
Total 5001 ODOT GRANTS	152,713.00	0.00	152,713.00	0.00	152,713.00	1,334,713.00	11%
Total 5000 GRANTS	152,713.00	0.00	152,713.00	0.00	152,713.00	1,334,713.00	11%
5080 OREGON STF FUNDS	0.00	0.00	23,310.00	0.00	23,310.00	0.00	
Other Types of Income	0.00	0.00	0.00	0.00	0.00	0.00	
Total Income	341,952.67	119,857.00	412,604.78	175,503.00	237,101.78	3,031,313.00	14%
Gross Profit	341,952.67	119,857.00	412,604.78	175,503.00	237,101.78	3,031,313.00	14%
Expense							
1. PERSONNEL SERVICES							
6005 SALARIES & WAGES	163,835.78	137,755.00	256,681.53	229,594.00	(27,087.53)	1,239,798.00	21%
6200 PAYROLL EXPENSES	14,344.45	13,724.00	24,837.44	22,872.00	(1,965.44)	123,500.00	20%
6300 EMPLOYEE BENEFITS	23,068.00	39,680.00	50,866.18	63,854.00	12,987.82	321,100.00	16%
Total 1. PERSONNEL SERVICES	201,248.23	191,159.00	332,385.15	316,320.00	(16,065.15)	1,684,398.00	20%
2. MATERIALS & SERVICES					-		
7000 RC PROVIDER PAYMENTS	374.22	0.00	960.12	0.00	(960.12)	0.00	
7030 BUS PASSES	0.00	0.00	0.00	0.00	0.00	0.00	
7050 DMAP/CCO Annual Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	
7750 DMAP Trip Reimb-Other	0.00	0.00	0.00	0.00	0.00	0.00	
8005 AUDIT	0.00	6,020.00	0.00	6,020.00	6,020.00	30,000.00	0%
8006 ADS (HR JOB POSTING)	366.70	1,790.00	757.42	1,790.00	1,032.58	3,500.00	22%
8010 BANK FEES	122.67	147.25	259.48	387.50	128.02	2,000.00	13%
8020 BLDING & GROUNDS MAINT	1,308.18	6,499.00	3,615.58	11,061.00	7,445.42	75,500.00	5%
8030 COMP-INFO-TECH SERVICES					0.00		
8031 WEBSITE/ON-LINE SW SUB	5,171.80	4,814.00	5,793.59	5,625.00	(168.59)	13,935.00	42%
8032 SUPPORT SERVICES/CONTRACTS	4,108.97	4,030.00	8,097.95	8,060.00	(37.95)	65,065.00	12%
8030 COMP-INFO-TECH SERVICES - Other	0.00	0.00	0.00	0.00	0.00	0.00	
Total 8030 COMP-INFO-TECH SERVICES	9,280.77	8,844.00	13,891.54	13,685.00	(206.54)	79,000.00	18%
8035 CONF TRAINING & TRAVEL	1,422.33	560.00	2,882.09	2,902.00	19.91	27,000.00	11%
8040 DONATIONS/CONTRIBUTIONS	0.00	0.00	0.00	0.00	-	0.00	
8045 DRUG/ALCOHOL/BG CHECKS	779.00	225.00	779.00	397.00	(382.00)	2,500.00	31%

Sunset Empire Transportation District
Profit & Loss Budget Performance-SETD
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
8050 DUES SUBSCRIPTIONS & FEES	72.50	151.00	2,760.84	1,668.00	(1,092.84)	13,500.00	20%
8053 IGA - DUES AND FEES	3,000.00	0.00	3,000.00	2,500.00	(500.00)	10,000.00	30%
8055 DURABLE EQUIP/SMALL TOOLS	491.91	1,466.00	3,753.89	1,466.00	(2,287.89)	15,000.00	25%
8061 EQUIPMENT LEASE/RENT	188.00	250.00	376.00	500.00	124.00	3,000.00	13%
8065 EDUCATION/OUTREACH	48.89	1,380.00	1,032.44	2,529.00	1,496.56	30,000.00	3%
8070 EMPLOYEE RECOGNITION	245.45	160.00	421.40	368.00	(53.40)	10,000.00	4%
8072 ELECTION FEES	0.00	0.00	0.00	0.00	-	5,500.00	0%
8075 FUEL	17,495.23	24,162.00	35,465.77	49,162.00	13,696.23	230,000.00	15%
8080 INSURANCE	19.00	4,500.00	19.00	8,000.00	7,981.00	85,000.00	0%
8090 LEGAL ADS	0.00	38.00	0.00	78.00	78.00	800.00	0%
8095 LEGAL COUNSEL	3,702.50	80.00	4,402.50	80.00	(4,322.50)	3,000.00	147%
8100 MEETING EXPENSE	337.82	155.00	526.76	200.00	(326.76)	2,000.00	26%
8120 OFFICE SUPPLIES	753.47	1,538.00	2,359.08	2,407.00	47.92	15,000.00	16%
8130 PAYROLL PROCESSING FEES	1,191.38	167.00	1,649.50	334.00	(1,315.50)	2,000.00	82%
8135 PRINTING	784.97	3,000.00	784.97	4,000.00	3,215.03	20,000.00	4%
8139 PROFESSIONAL SERVICES	4,080.00	1,250.00	5,312.40	2,500.00	(2,812.40)	15,000.00	35%
8150 TAXES/LICENSES/BUS REG FEE	0.00	40.00	244.00	82.00	(162.00)	500.00	49%
8155 TELEPHONE/INTERNET SERVICE	7,523.33	4,500.00	11,539.41	9,000.00	(2,539.41)	54,000.00	21%
8160 UNIFORMS	155.08	188.00	348.93	433.00	84.07	5,000.00	7%
8165 UTILITIES	1,709.78	2,450.00	2,980.20	4,764.00	1,783.80	30,000.00	10%
8170 VEHICLE MAINT & REPAIRS	26,998.59	8,836.00	55,729.56	16,617.00	(39,112.56)	140,000.00	40%
Total 2. MATERIALS & SERVICES	82,451.77	78,396.25	155,851.88	142,930.50	(12,921.38)	908,800.00	17%
Total Expense	283,700.00	269,555.25	488,237.03	459,250.50	(28,986.53)	2,593,198.00	19%
Net Ordinary Income	58,252.67	-149,698.25	-75,632.25	-283,747.50	(208,115.25)	438,115.00	-17%
Other Income/Expense							
Other Income							
9150 TRANSFER IN	0.00	0.00	0.00	0.00	0	205,582.00	0%
Total Other Income	0.00	0.00	0.00	0.00	0	205,582.00	0%
Other Expense					0		
3. OTHER EXPENSES					0		

Sunset Empire Transportation District
Profit & Loss Budget Performance-SETD
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
9610 CLATSOP BANK-PRINCIPAL	6,089.81	6,090.62	12,146.76	12,166.85	20.09	74,866.85	16%
9611 CLATSOP BANK-LOAN INT	483.69	482.88	1,000.24	980.15	(20.09)	4,015.15	25%
Total 3. OTHER EXPENSES	6,573.50	6,573.50	13,147.00	13,147.00	0	78,882.00	17%
9600 DEBT SERVICE & INTERES-FEE	0.00	0.00	0.00	0.00	0	175.00	0%
9625 SDAO FLEXLEASE-PRINCIPAL	0.00	0.00	0.00	0.00	0	45,291.15	0%
9626 SDAO FLEXLEASE-INTEREST	0.00	0.00	0.00	0.00	0	3,490.85	0%
9700 CAPITAL EXPENSE	0.00	0.00	0.00	0.00	0	837,455.00	0%
9800 CONTINGENCY	0.00	0.00	0.00	0.00	0	160,000.00	0%
9850 TRANSFER OUT	0.00	0.00	0.00	0.00	0	123,582.00	0%
Total Other Expense	6,573.50	6,573.50	13,147.00	13,147.00	0	1,248,876.00	1%
Net Other Income	-6,573.50	-6,573.50	-13,147.00	-13,147.00	0	-1,043,294.00	1%
Net Income	**51,679.17**	**-156,271.75**	**-88,779.25**	**-296,894.50**	-208115.25	**-605,179.00**	**15%**

Sunset Empire Transportation District
Profit & Loss Budget Performance-RC
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
Ordinary Income/Expense					Better		
Income					(Worse)		
4300 INTEREST	292.13	0.00	713.81	50.00	663.81	50.00	0%
4500 RC PROVIDER SERVICE REIM	112,963.02	59,314.00	343,094.12	446,500.00	(103,405.88)	446,500.00	-57%
Total Income	113,255.15	59,314.00	343,807.93	446,550.00	(102,742.07)	446,550.00	-58%
Gross Profit	113,255.15	59,314.00	343,807.93	446,550.00	(102,742.07)	446,550.00	-58%
Expense							
1. PERSONNEL SERVICES							
6005 SALARIES & WAGES	20,490.29	15,000.00	55,059.94	53,600.00	(1,459.94)	53,600.00	-1027%
6200 PAYROLL EXPENSES	1,703.40	1,000.00	4,679.96	5,000.00	320.04	5,000.00	312%
6300 EMPLOYEE BENEFITS	3,092.49	750.00	8,392.99	3,500.00	(4,892.99)	3,500.00	-15%
Total 1. PERSONNEL SERVICES	25,286.18	16,750.00	68,132.89	62,100.00	(6,032.89)	62,100.00	-278%
2. MATERIALS & SERVICES							
7000 RC PROVIDER PAYMENTS	130,704.47	150,000.00	346,544.26	448,500.00	101,955.74	448,500.00	147%
7030 BUS PASSES	70.00	0.00	5,950.00	3,500.00	(2,450.00)	3,500.00	0%
7050 DMAP/CCO Annual Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	
7750 DMAP Trip Reimb-Other	0.00	0.00	0.00	0.00	0.00	0.00	
8005 AUDIT	0.00	0.00	0.00	1,295.00	1,295.00	1,295.00	0%
8006 ADS (HR JOB POSTING)	0.00	0.00	0.00	0.00	0.00	0.00	
8010 BANK FEES	0.10	0.00	0.20	0.00	(0.20)	0.00	0%
8020 BLDING & GROUNDS MAINT	306.58	0.00	1,831.73	350.00	(1,481.73)	350.00	0%
8025 BUS PASSES	0.00	0.00	0.00	0.00	0.00	0.00	
8030 COMP-INFO-TECH SERVICES							
8031 WEBSITE/ON-LINE SW SUB	133.20		266.40		(266.40)		0%
8030 COMP-INFO-TECH SERVICES - Other	0.00	0.00	0.00	100.00	100.00	100.00	0%
Total 8030 COMP-INFO-TECH SERVICES	133.20	0.00	266.40	100.00	(166.40)	100.00	0%
8035 CONF TRAINING & TRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	

Sunset Empire Transportation District
Profit & Loss Budget Performance-RC
August 2018

	Month Actual	Month Budget	YTD Actual	YTD Budget	YTD Budget to YTD Actual	Annual Budget	YTD Act to Budget
8045 DRUG/ALCOHOL/BG CHECKS	0.00	0.00	0.00	60.00	60.00	60.00	0%
8050 DUES SUBSCRIPTIONS & FEES	0.00	0.00	20.16	0.00	(20.16)	0.00	0%
8055 DURABLE EQUIP/SMALL TOOLS	34.95	0.00	0.00	0.00	0.00	0.00	
8065 EDUCATION/OUTREACH	0.00	0.00	0.00	0.00	0.00	0.00	
8070 EMPLOYEE RECOGNITION	193.66	0.00	0.00	100.00	100.00	100.00	0%
8080 INSURANCE	0.00	0.00	0.00	1,200.00	1,200.00	1,200.00	0%
8095 LEGAL COUNSEL	0.00	0.00	0.00	0.00	0.00	0.00	
8100 MEETING EXPENSE	0.00	0.00	0.00	100.00	100.00	100.00	0%
8120 OFFICE SUPPLIES	60.56	0.00	447.98	200.00	(247.98)	200.00	0%
8130 PAYROLL PROCESSING FEES	0.00	0.00	0.00	56.00	56.00	56.00	0%
8135 PRINTING	0.00	0.00	0.00	0.00	0.00	0.00	
8139 PROFESSIONAL SERVICES	0.00	0.00	279.00	375.00	96.00	375.00	0%
8155 TELEPHONE/INTERNET SERVICE	1,166.50	0.00	2,304.84	850.00	(1,454.84)	850.00	0%
8160 UNIFORMS	0.00	0.00	0.00	0.00	0.00	0.00	
8165 UTILITIES	631.27	0.00	1,110.83	873.00	(237.83)	873.00	0%
Total 2. MATERIALS & SERVICES	133,301.29	150,000.00	358,755.40	457,559.00	98,803.60	457,559.00	152%
Total Expense	158,587.47	166,750.00	426,888.29	519,659.00	92,770.71	519,659.00	180%
Net Ordinary Income	-45,332.32	-107,436.00	-83,080.36	-73,109.00	9,971.36	-73,109.00	-1077%
Other Income/Expense							
Other Expense							
9625 SDAO FLEXLEASE-PRINCIPAL	0.00	0.00	0.00	0.00	0.00	0.00	
9626 SDAO FLEXLEASE-INTEREST	0.00	0.00	0.00	0.00	0.00	0.00	
9655 DMAP REPAYMENT AGREEMENT	0.00	0.00	0.00	0.00	0.00	0.00	
9800 CONTINGENCY	0.00	0.00	0.00	0.00	0.00	0.00	
Total Other Expense	0.00	0.00	0.00	0.00	0.00	0.00	
Net Other Income	0.00	0.00	0.00	0.00	0.00	0.00	
Net Income	**-45,332.32**	**-107,436.00**	**-83,080.36**	**-73,109.00**	9,971.36	**-73,109.00**	**-1077%**

Sunset Empire Transportation District
Balance Sheet
As of August 31, 2017

	Aug 31, 17
ASSETS	
Current Assets	
Checking/Savings	1,537,276.31
Accounts Receivable	70,185.73
Other Current Assets	
1400 PREPAID EXPENSES	
1401 PREPAID INS/BENEFITS	9,103.37
1400 PREPAID EXPENSES - Other	(8,618.56)
Total 1400 PREPAID EXPENSES	484.81
1500 UNDEPOSITED FUNDS	1,344.70
Total Other Current Assets	1,829.51
Total Current Assets	1,609,291.55
TOTAL ASSETS	**1,609,291.55**

LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
2000 ACCOUNTS PAYABLES	107,837.57
Total Accounts Payable	107,837.57
Other Current Liabilities	17,022.33
Total Current Liabilities	124,859.90
Long Term Liabilities	
2800 INTERCOMPANY DUE TO/FROM	
2810 DUE TO RIDECARE	(37,934.82)
2815 DUE TO/(FROM) SETD G F	37,934.82
Total 2800 INTERCOMPANY DUE TO/FROM	0.00
Total Long Term Liabilities	0.00
Total Liabilities	124,859.90
Equity	
3100 NWRC PRIOR PERIOD ADJUST	8,891.00
3200 GF PRIOR PERIOD ADJUST	(8,891.00)
3700 FUND BALANCE NWRC-RESTRICT	1,311,117.11
3800 FUND BALANCE GENERAL FUND	780,850.87
3900 RETAINED EARNINGS	(654,177.60)
Net Income	46,641.27
Total Equity	1,484,431.65
TOTAL LIABILITIES & EQUITY	**1,609,291.55**

Sunset Empire Transportation District
A/R Aging Summary
As of August 31, 2018

	Current	1 - 30	31 - 60	TOTAL
P-H&R Block	0.00	142.50	0.00	142.50
PROVIDENCE ELDERPLACE	0.00	100.00	0.00	100.00
Providence Seaside Hospital	0.00	20.00	20.00	40.00
RC-COLUMBIA PACIFIC	0.00	0.00	0.00	0.00
TOTAL	**0.00**	**262.50**	**20.00**	**282.50**

Sunset Empire Transportation District
A/P Aging Summary
As of August 31, 2018

	Current	1 - 30	31 - 60	TOTAL
ALSCO	38.77	0.00	0.00	38.77
ANGELTRAX	0.00	358.80	0.00	358.80
ASTORIA FORD	475.81	0.00	0.00	475.81
ASTORIA, CITY OF	590.22	0.00	0.00	590.22
BIO-MED TESTING SERVICES, INC	235.00	0.00	0.00	235.00
CARD SERVICE CENTER	3,939.81	0.00	0.00	3,939.81
CRS	372.67	720.00	440.00	1,532.67
E-OMINSKI, ROSEMARY	214.98	0.00	0.00	214.98
EARTH2O	14.54	0.00	0.00	14.54
EO MEDIA GROUP	366.70	0.00	0.00	366.70
FISHER & PHILLIPS, LLP	3,527.50	0.00	0.00	3,527.50
HAUER'S SECURITY	1,920.00	0.00	0.00	1,920.00
HEATHER REYNOLDS	175.00	0.00	0.00	175.00
HOME DEPOT CREDIT SERVICES	96.62	0.00	0.00	96.62
INDUSTRIAL DIESEL POWER, INC	2,385.49	0.00	0.00	2,385.49
IRON MOUNTAIN	102.36	0.00	0.00	102.36
JACKSON & SON OIL, INC.	3,996.89	0.00	0.00	3,996.89
MCCALL TIRE CENTER - Warrenton	1,187.26	0.00	0.00	1,187.26
MTR WESTERN BUS	974.60	0.00	0.00	974.60
NORTH COAST TRUCK	0.00	37.00	0.00	37.00
NW NATURAL	72.39	0.00	0.00	72.39
O'REILLY AUTO PARTS	943.00	0.00	0.00	943.00
OFFICE DEPOT	1,024.41	0.00	0.00	1,024.41
OREGON STATE POLICE	336.00	0.00	0.00	336.00
P & L JOHNSON MECHANICAL, INC	95.00	0.00	0.00	95.00
POLK RILEY'S PRINTING, INC.	74.75	0.00	0.00	74.75
PRECISION ALIGNMENT	2,291.74	0.00	0.00	2,291.74
RECOLOGY WESTERN OREGON	101.55	0.00	0.00	101.55
TIAA	188.00	0.00	0.00	188.00
VERIZON WIRELESS	887.00	0.00	0.00	887.00
Wadsworth Electric	18.65	0.00	0.00	18.65
WARRENTON, CITY OF	359.55	0.00	0.00	359.55
WESTERN BUS SALES, INC.	489.38	0.00	0.00	489.38
WILCOX & FLEGEL	13,827.10	-209.68	0.00	13,617.42
TOTAL	**41,322.74**	**906.12**	**440.00**	**42,668.86**

Sunset Empire Transportation District
Check Detail
August 2018

Num	Date	Name	Paid Amount
5396	08/06/2018	RC-K & M MEDIVAN	10,457.94
5397	08/06/2018	RC-LEE, RYAN	5,895.40
5404	08/06/2018	RC-SETD-PASSES	5,420.00
5406	08/06/2018	RC-TILLAMOOK COUNTY TRANSPORTATION	11,512.00
5407	08/06/2018	RC-WAPATO SHORES, INC	18,652.35
5481	08/15/2018	RC-K & M MEDIVAN	8,277.34
5487	08/15/2018	RC-TILLAMOOK COUNTY TRANSPORTATION	20,297.00
5491	08/15/2018	RC-WILCOX & FLEGEL	10,039.22
18226	08/06/2018	ROD'S AUTO & MARINE ELECTRIC	7,047.90
18254	08/15/2018	WILCOX & FLEGEL	14,885.50
18280	08/21/2018	WARRENTON AUTO & MARINE REPAIR, INC.	8,528.27
18283	08/21/2018	SDIS	34,141.08
		Total	155,154.00

Bill

Sunset Empire Transportation District
900 Marine Drive
Astoria, OR 97103

Date	Ref. No.
09/18/2018	8/30-9/7/18

Vendor
CARD SERVICE CENTER PO BOX 569100 DALLAS TX 75356-9100

PAID

Bill Due	10/02/2018
Terms	
Memo	8/30-9/7/18

Expenses

Account	Memo	Amount	Customer:Job	Class
	1050 - CARLSON			ADMINISTRATION
8036 CONFERENCE/TRAINING FEES	FGPI MEMBER EVENT FEE	125.00		ADMINISTRATION
8121 POSTAGE-SHIPPING	USPS - POSTAGE	7.41		ADMINISTRATION
	0326 - HAZEN			
8038 TRAVEL	SALUMI - FTA MEALS	25.82		ADMINISTRATION
8038 TRAVEL	SOUND TRANSIT - FTA	5.25		ADMINISTRATION
8038 TRAVEL	SOUND TRANSIT - FTA	5.25		ADMINISTRATION
8038 TRAVEL	SOUND TRANSIT - FTA	5.25		ADMINISTRATION
8038 TRAVEL	PACIFIC GRILL - FTA MEALS	18.47		ADMINISTRATION
8038 TRAVEL	KINGDOME DELI - FTA MEALS	19.95		ADMINISTRATION
8038 TRAVEL	KING STREET BAR & GRILL - FTA MEALS	16.50		ADMINISTRATION
8121 POSTAGE-SHIPPING	USPS - POSTAGE	6.70		ADMINISTRATION
8032 SUPPORT SERVICES/CONTRACT	APPLE - MONTHLY STORAGE PLAN	0.99		ADMINISTRATION
8038 TRAVEL	THE RAM - FTA MEALS	18.24		ADMINISTRATION
	0284 - JONES			
8050 DUES SUBSCRIPTIONS & FEES	AMAZON - PRIME SUBSCRIPTION - ERROR	12.99		ADMINISTRATION
8057 OFFICE FURNITURE & EQUIP	STAPLES - COMPUTER KEYBOARD	34.99		ADMINISTRATION
8120 OFFICE SUPPLIES	STAPLES - OFFICE SUPPLIES	75.97		ADMINISTRATION
	0103 - LAYTON			
8032 SUPPORT SERVICES/CONTRACT	ADOBE ID CREATIVE CLD	19.99		ADMINISTRATION
8120 OFFICE SUPPLIES	HOME DEPOT - OFFICE SUPPLIES	79.92		ADMINISTRATION
8032 SUPPORT SERVICES/CONTRACT	ORECX - TELEPHONES	160.00		ADMINISTRATION

Bill

Sunset Empire Transportation District
900 Marine Drive
Astoria, OR 97103

Date	Ref. No.
09/18/2018	8/30-9/7/18

Vendor
CARD SERVICE CENTER PO BOX 569100 DALLAS TX 75356-9100

PAID

Bill Due 10/02/2018

Terms

Memo 8/30-9/7/18

Expenses

Account	Memo	Amount	Customer:Job	Class
8032 SUPPORT SERVICES/CONTRACT	ADOBE ACROBAT PRO	14.99		ADMINISTRATION
8030 COMP-INFO-TECH SERVICES	SECURE DATA RECOVERY	995.00		ADMINISTRATION
	0946 - LEWICKI			
8021 B&M GENERAL	HOMETOWN TROLLEY	46.13		ADMINISTRATION
8070 EMPLOYEE RECOGNITION	SMART FDOOD - POPCORN/CANDY	32.41		ADMINISTRATION
8021 B&M GENERAL	HOMETOWN TROLLEY - HEADLIGHT GASKET	20.00		ADMINISTRATION
8121 POSTAGE-SHIPPING	THE UPS STORE - POSTAGE	12.98		ADMINISTRATION
8021 B&M GENERAL	RYDER - RED BUS LAMP	45.08		ADMINISTRATION
8100 MEETING EXPENSE	PUB 212 - MEAL PAUL/SCOTT - BUS DELIVERY	21.90		ADMINISTRATION
8170 VEHICLE MAINT & REPAIRS	HOME DEPOT - BUS WASH	8.97		ADMINISTRATION
8178 TIRE PURCHASES	DEL'S OK TIRE - TIRE	120.00		ADMINISTRATION
8021 B&M GENERAL	MORRYDE INTERNATIONAL - BUS PART	50.41		ADMINISTRATION
8021 B&M GENERAL	RYDER - AMBER BUS LAMP	42.25		ADMINISTRATION
8022 B&M JANITORIAL	SAFEWAY - TRASH BAGS	8.99		ADMINISTRATION
	0020 - PARKER			
8121 POSTAGE-SHIPPING	STAMPS.COM - POSTAGE	15.99		ADMINISTRATION
8100 MEETING EXPENSE	FRED MEYER - FOOD BOARD MEETING	24.97		ADMINISTRATION
8100 MEETING EXPENSE	FRED MEYER - FOOD BOARD MEETING	27.73		ADMINISTRATION
8100 MEETING EXPENSE	SAFEWAY - FOOD BOARD MEETING	6.00		ADMINISTRATION
8100 MEETING EXPENSE	SAFEWAY - FOOD BOARD MEETING	82.31		ADMINISTRATION
8121 POSTAGE-SHIPPING	STAMPS.COM - POSTAGE	100.00		ADMINISTRATION

Bill

Sunset Empire Transportation District
900 Marine Drive
Astoria, OR 97103

Date	Ref. No.
09/18/2018	8/30-9/7/18

Vendor
CARD SERVICE CENTER PO BOX 569100 DALLAS TX 75356-9100

PAID

Bill Due 10/02/2018

Terms

Memo 8/30-9/7/18

Expenses

Account	Memo	Amount	Customer:Job	Class
8065 EDUCATION/OUTREACH	FACEBOOK - BOOST POSTS	10.00		ADMINISTRATION
8032 SUPPORT SERVICES/CONTRACT	0961 - WEINTRAUB SURVEYMONKEY.COM	105.00		ADMINISTRATION
8065 EDUCATION/OUTREACH	PAPERPRO - EDUCATIONAL MATERIALS	11.45		ADMINISTRATION
8032 SUPPORT SERVICES/CONTRACT	ADOBE - ACROPRO	14.99		ADMINISTRATION
8051 LATE FEES/INTEREST CHRGS	late fee $25 and interest $68.39	93.39		ADMINISTRATION

Expense Total : 2,549.63

Bill Total : $2,549.63

Date: August 16, 2018

To: Board of Commissioners

From: Jeff Hazen

Re: Agenda Item 8.a Transportation Advisory Committee Appointments

At it's May meeting, the Board approved changing the Senior and Disabled Transportation Advisory Committee to the Transportation Advisory Committee. You also direct staff to begin efforts to recruit people for the vacant seats on the committee. The current committee has 3 members whose terms expired at the end of June. They all have indicated that they would like to continue serving. They are Larry Miller in Position 1, Patrick Preston in Position 2, and Margaret Chenowith in Position 3.

Position 4 is vacant, Position 5 is held by Barbara Carson whose term expires June 30th, 2019. Position 6 is vacant, and Position 7 is currently held by Bryan Kidder with Tracy MacDonald as the alternate. The Commissioner seat has been a non-voting position unless it was needed to break a tie.

STIF rules call for our committee to have a minimum of 5 members but the governing body can authorize a larger committee. At the May meeting, I recommended that we have 7 members.

To be qualified to serve on the Advisory Committee for a Qualified Entity that is a Transportation District, an individual must:

(a) Be knowledgeable about the public transportation needs of residents or employees located within or traveling to and or from the Transportation District; and

(b) Be a person who is a member of or represents one or more of the following:

(A) local governments, including land use planners;
(B) Public Transportation Service Providers;
(C) non-profit entities which provide public transportation services;
(D) neighboring Public Transportation Service Providers;
(E) employers;
(F) public health, social and human service providers;
(G) transit users;
(H) transit users who depend on transit for accomplishing daily activities;
(I) individuals age 65 or older;
(J) people with disabilities;
(K) low-income individuals;
(L) social equity advocates;
(M) environmental advocates;
(N) bicycle and pedestrian advocates;
(O) people with limited English proficiency;

(P) educational institutions; or,
(Q) major destinations for users of public transit

Notwithstanding other provisions of this rule, if a Qualified Entity is a Transportation District, then its Advisory Committee must include at least one member who is a member of or represents each of the following three groups:

(a) low-income individuals;
(b) individuals age 65 or older or people with disabilities; and
(c) Public Transportation Service Providers or non-profit entities which provide public transportation services.

A Qualified Entity that is a Transportation District shall include Advisory Committee members from the district's area of responsibility, both within and outside district boundaries.

We have received applications from 6 people interested in serving. They are:

Name:	Representing
Lin Anderson	Seniors or Low income
Chris Breitmeyer	Educational Institutions
Mel Jasmin	Senior/Disabled, Low Income, Land Use Planning
Carmella Lear	Transit User
Richard McIntosh	Senior/Disabled
Tita Montero	Local Government, Senior/Disabled

The Board needs to decide if they want to stay with my recommendation of having 7 members or expand the number of seats on the committee. If the Board stays having 7 members and assuming you will reappoint the 3 existing members, you will only be able to appoint 1 person from this list. Because of the rule that states we ***shall*** include someone from outside of district boundaries, that person would take up the other open seat. In a discussion with Doug Pilant, the General Manager of Tillamook County Transportation District, we agreed that we would serve on each other's committee. This will be highly beneficial for both of us.

The other option would be to expand the number of seats on the committee. I would recommend that the committee not exceed 14 members. If this is the direction that the Board takes, you will need to determine how many seats you would like to have on it. For example, if you appointed everyone that is interested in serving, then the committee would have 12 members. Also, because Public Transportation Service Providers is a category, the SETD Board member would become a voting member.

Staff is recommending that the Board first decide how many seats our Transportation Advisory Committee will have and then reappoint and or appoint members to the seats. Terms of the appointments have been 2 and we recommend keeping that term. We will need to stagger the terms so half of the appointees would be appointed with their terms expiring on June 30, 2020 and half with terms expiring on June 30, 2019.

7 members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Barbara Carson	5	Seniors	6/30/2019
Vacant*	6	Outside Area	6/30/2019
Bryan Kidder	7	Transit Prov.	6/30/2019

*Must be out of area

8 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Barbara Carson	5	Seniors	6/30/2019
Vacant	6		6/30/2019
Vacant*	7	Outside Area	6/30/2019
Bryan Kidder	8	Transit Prov.	6/30/2019

*Must be out of area

9 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2019
Barbara Carson	6	Seniors	6/30/2019
Vacant	7		6/30/2019
Vacant*	8	Outside Area	6/30/2019
Bryan Kidder	9	Transit Prov.	6/30/2019

*Must be out of area

10 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2018
Barbara Carson	6	Seniors	6/30/2019
Vacant	7		6/30/2019
Vacant	8		6/30/2019
Vacant*	9	Outside Area	6/30/2019
Bryan Kidder	10	Transit Prov.	6/30/2019

*Must be out of area

11 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2018
Barbara Carson	6	Seniors	6/30/2019
Vacant	7		6/30/2019
Vacant	8		6/30/2019
Vacant	9		6/30/2019
Vacant*	10	Outside Area	6/30/2019
Bryan Kidder	11	Transit Prov.	

*Must be out of area

12 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2018
Vacant	6		6/30/2018
Barbara Carson	7	Seniors	6/30/2019
Vacant	8		6/30/2019
Vacant	9		6/30/2019
Vacant	10		6/30/2019
Vacant*	11	Outside Area	6/30/2019
Bryan Kidder	12	Transit Prov.	6/30/2019

*Must be out of area

13 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2018
Vacant	6		6/30/2018
Barbara Carson	7	Seniors	6/30/2019
Vacant	8		6/30/2019
Vacant	9		6/30/2019
Vacant	10		6/30/2019
Vacant	11		6/30/2019
Vacant*	12	Outside Area	6/30/2019
Bryan Kidder	13	Transit Prov.	6/30/2019

*Must be out of area

14 Members

Name	Position	Representing	Term Exp.
Larry Miller	1	Seniors	6/30/2018
Patrick Preston	2	Veterans	6/30/2018
Margaret Chenowith	3	Disabled User	6/30/2018
Vacant	4		6/30/2018
Vacant	5		6/30/2018
Vacant	6		6/30/2018
Vacant	7		6/30/2018
Barbara Carson	8	Seniors	6/30/2019
Vacant	9		6/30/2019
Vacant	10		6/30/2019
Vacant	11		6/30/2019
Vacant	12		6/30/2019
Vacant*	13	Outside Area	6/30/2019
Bryan Kidder	14	Transit Prov.	6/30/2019

*Must be out of area

RECEIVED
JUL 30 2018

SUNSET EMPIRE TRANSPORTATION DISTRICT

TRANSPORTATION ADVISORY COMMITTEE

MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name LIN ANDERSON		
Address 1246 Ave E Seaside, OR 97138		
Phone 503-717-2627	email anderson lin 49@aol.com	Date of Birth Jan. 07, 1949
Signature Lin Anderson		

1. Please list your areas of interest in serving on the Transportation Advisory Committee? I feel I want to be involved with the workings of the Committee as they expand and develope programs

2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit) I am most interested in representing members of the Senior and Disabled community, as well as the low income individuals.

3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services? I gave up my car in 2013 due to health issues. SETD has been my main source of mobility since.

4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee? I was an officer in the American Legion Auxiliary for 4yrs., co-developed a pilot program for alternative learning environment for the School district, and have served on multiple committees for a variety of programs and organizations.

RECEIVED
JUL 30 2018

SUNSET EMPIRE TRANSPORTATION DISTRICT

TRANSPORTATION ADVISORY COMMITTEE

MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name Chris Breitmeyer		
Address 1651 Lexington Ave., Astoria, OR 97103		
Phone (503) 338-2425	Email cbreitmeyer@clatsopcc.edu	Date of Birth 01/26/1970
Signature		

1. Please list your areas of interest in serving on the Transportation Advisory Committee?

As president of Clatsop Community College, I serve many students who use the district services to access our campuses. They use the Transportation District to get to work, shop, and access other services in our community. In addition to that, I am an advocate for public transit and the importance it plays in supporting so many populations in our communities while at the same time being an efficient, environmentally friendly way to get people from one place to another.

2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit)

While I could fall into several of these categories, I would check the box next to educational institutes.

3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services?

Yes, I have taken the bus a few times though it is not a regular occurrence.

4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee?

I served on the Budget Advisory Committee for the City of Astoria, in addition to serving on the Arts and Culture Subcommittee of that same group.

RECEIVED
JUL 18 2018

SUNSET EMPIRE TRANSPORTATION DISTRICT

TRANSPORTATION ADVISORY COMMITTEE

MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name	Melvin (Mel) Jasmin		
Address	701 NW Warrenton DR #10 Warrenton, OR 97146 (P.O. Box 1029)		
Phone	503-861-2030 503-440-0086	mel@houseofjasmin.com email	2 August 1934 Date of Birth
Signature			

1. Please list your areas of interest in serving on the Transportation Advisory Committee?

   Senior & Disabled, Low Income, Land Use Planning

2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit)

   Same as above

3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services?

   No

4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee?

   NW Oregon Housing Authority Board
   Warrenton Urban Development Committee

REC

JUL 14 2018

SUNSET EMPIRE TRANSPORTATION DISTRICT

TRANSPORTATION ADVISORY COMMITTEE

MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name Carmella Lear		
Address 101 Forest DR #109 SEASIDE Ore		
Phone 503-812-2911	email Carar melcarm@ gmail.com.	Date of Birth 8/29/51
Signature Carmella Lear		

1. Please list your areas of interest in serving on the Transportation Advisory Committee?
   Suzanne Elise A Bus going TO
2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit)
   Concern Citizen
3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services? yes Regular Rider
4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee? none

SUNSET EMPIRE TRANSPORTATION DISTRICT

TRANSPORTATION ADVISORY COMMITTEE

MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name Richard McIntosh		
Address 92068 Drucker Place Astoria 97103		
Phone 408 202-2595	email patel13@mac.com	Date of Birth June 19, 1951
Signature Richard M		

1. Please list your areas of interest in serving on the Transportation Advisory Committee? Transit customers, planning, capital improvements

2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit) Senior/disabled, resident/Employee transportation needs, Planning

3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services? NO

4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee? Tri-City/Paratransit Committee Board, Project Manager for Santa Cruz Metropolitan Transit District, Valley Transportation Authority Project consultant

SUNSET EMPIRE TRANSPORTATION DISTRICT
TRANSPORTATION ADVISORY COMMITTEE
MEMBER APPLICATION

Thank you for your interest in serving on the Transportation Advisory Committee. Please complete this application. Any additional information you wish to have considered may also be attached. Return your application either by mail to SETD 900 Marine Drive Astoria OR. 97103, by email to mary@ridethebus.org or drop completed application off at the Astoria Transit Center Ticket Counter at 900 Marine Drive Astoria, or at the Seaside Transit Kiosk at 1111 N. Roosevelt, Seaside. For further assistance contact Mary Parker 503-861-5370.

Applications will be accepted until Friday August 3, 2018 at 5:00 pm.

Name	Esperanzita (Tita) Montero				
Address	135 6th Avenue Seaside OR 97138				
Phone	503-440-4454	Email	eifxcm@gmail.com	Date of birth	4/1/1950
Signature	*Tita Montero*				

1. Please list your areas of interest in serving on the Transportation Advisory Committee?

   As SETD provides the only opportunities for public transportation in our county, I feel it's important that our system be as responsive and effective as possible. I'm interested in learning more about how the system works for the public and being a conduit of public input to allow for continuous improvement of the system.

2. What category are you seeking to represent? (Senior and Disabled, resident/employee public transportation needs, local government, land use planning, neighboring transit provider, employers, public health, low income individuals, social equity advocate, environmental advocate, bicycle and pedestrian advocate, people with limited English proficiency, educational institutes and major destination users of public transit)

   I could represent one of either of the categories in the following order of preference:

   a) Local government (I sit on the Seaside City Council)
   b) Senior and Disabled

3. Although not a requirement, do you have any experience using Sunset Empire Transportation District services?

   I have ridden the bus only a few times. I have ridden the Seaside streetcar once. I have not had the need or opportunity to use other services.

4. Please list if you have been a member of a group, volunteered or served on a committee similar to the Transportation Advisory Committee?

   - Around 2010-14 I was on an advisory board for SETD representing a major user, Tongue Point Job Corps Center. Currently, I sit on SETD's Budget committee.
   - I currently serve on the following boards: Clatsop CASA, Clatsop County Cultural Coalition, Coaster Theatre, Seaside Museum, Clatsop Behavioral Health.
   - I currently serve on Columbia Memorial Hospital's Patient & Family Advisory Committee
   - I have also served on the board of Clatsop Economic Development Resources (CEDR) and am beginning to be active providing advice to the Lower Columbia Hispanic Council.

Date: September 21, 2018

To: Board of Commissioners

From: Jeff Hazen

Re: Agenda Item 8.b Seaside Kiosk Update

I will be making this a monthly item on the agenda to keep you apprised of where we are at in the process of relocating the kiosk. One of the partners of the outlet center is being contacted to make sure that he is okay with the idea that we have explained to them. The other partner is ok with the idea conditionally. His concerns are minor and can be addressed through a new lease agreement.

If I hear back from the outlet center manager before the meeting, I'll pass on that information as well.

Date: September 21, 2018

To: Board of Commissioners

From: Jeff Hazen

Re: Agenda Item 8.c Board Assessment Results

We have not received the results from the Board Assessment that you went through last month. We have made this an agenda item in case it comes in prior to the meeting so the Board can review and discuss the results.

Date: September 21, 2018

To: Board of Commissioners

From: John Layton

Re: Agenda Item 9.a Server Issues

Introduction

As you may know, we suffered a catastrophic failure of our computer network. The domain server, the brains of the network, crashed. It was located on a virtual server (a virtual server is a computer that is located inside another computer that allows us to share a bigger computer's resources). The virtual server files were located on a disk array (a disk array is a group of hard drives that store data). The disk array malfunctioned and started to erase its hard drives, including where the virtual server was located. Working with mindShift, we discovered where the fault was and how to fix it. We were able to rebuild the domain and save most of the files that were in the network. Unfortunately, our QuickBooks file was located on the same hard drive as the domain server and it was lost. We didn't realize that the virtual machines were not being backed up. This was a changed from the former network. We were able to send the disk array out to get the data recovered but it was expensive. We are almost back to where we were before the crash and have started to look for new solutions to prevent another failure.

The Crash

On August 24, 2018 at 4:59 am, Jeff and I both received phone calls from mindShift, our computer service vendor, to let us know that three servers were offline, this included Bering, our Domain Server, Titan, the backup Domain Server and Corvus, the print server and data backup server. Because our domain server was down, no one had access to their files. This put RideAssist in a tough spot as they didn't have access to their ride scheduling software. We worked on getting them going and we found a way to connect them to the server where the software was located. We had Internet access and phone access, so we were in pretty good shape for what the damage was.

MindShift found the cause to the problem of the crash. Our disk array, a device that has 24 disk drives that are setup to mirror each other to protect again one disk failing, had a bad raid card (raid is a technology that tells the disk drives how to work together). At this point mindShift contacted Dell to put in a warranty claim on the disk array. Dell was to send a technician to our office to replace the raid card. Over the weekend, mindShift was not able to find any backups to our files. I worked on trying to find those files. I was able to contact our former IT Manager and he reassured me that they should be there. I was able to find those files and verified that most of the files were still there and recent. Once I found those files, I setup permissions for mindShift to access them. Unfortunately, we were not able to find backups for the server, we had no recent QuickBook backup file (we did find on the disk array from November 2017).

Fix the Network

On Tuesday, August 28th, mindShift made their proposal to rebuild our network. They needed to rebuild our Domain Server. During the discussion, we decided to protect ourselves in the future by getting a "real" server (one you can touch) and put a backup domain on it. If the virtual domain server goes down, we will have a backup server to keep us in business. They we going to need to make sure the other servers were working and connected to the new domain server. Another decision we needed to make was on the QuickBooks files. MindShift mentioned the idea but didn't offer any suggestions. We started to look at data restoration vendors

and we found one that had a location in Portland. We contacted them and setup bringing the disk array up there. On Wednesday, August 29th, Paul took the disk array up there and they started to work on it.

We would need to rejoin all our workstations in Warrenton and Astoria. I volunteered to do that to save us some money. I worked with a technician from mindShift and I worked on getting users and drives back online while he was rebuilding servers.

By, Friday, August 31st, everyone had access to their data. The missing data was the QuickBooks files. On Tuesday, September 4th, Secure Data Recovery was able to fix the damaged QuickBooks files and tested verified that they worked. The service was costly, but we were able to save all of our data!

We are still working out some bugs of the network but for the most part, we are back where we were before.

What have we done to prevent this happening again?

Right now, we have started "first aid" to the network. I have started local backups of all files to our QNAS (The QNAS is a set of hard drives that are made for backing up data). We made a special server for QuickBooks. The QuickBooks server and the files are being backed up to the QNAS. I should have our Mozy backups running today so our back up data will be in the cloud as well.

Moving Forward

The key word for the future is redundancy. Next week, we should have our new backup domain server installed. We also are working on getting the disk array fixed and installed back in our system. After we get it installed, we will move all our working files back on it, except the QuickBook files, which will stay on their own server. We will then setup the current QNAP holding our current files and make it another backup drive. We will have two backup drives to backup our data. We will also be backing up the QuickBook files on both QNAPs.

Jeff had me start an investigation with Mozy about why the cloud backups didn't work. We are still in the investigation process. We may need to move to a new cloud backup company if we can get a good answer to why the backups just stopped.

Another idea we are looking at is moving all our files to the cloud. Now that we don't have RideCare here, we are in a position where quick access to data is not needed as much. RideAssist still needs access but we may be able to put together a hybrid system where some data stays local and the rest is moved to the cloud. This allows access to the data anywhere the user is at. We are no longer limited to having to access a server. Cloud security is much better now days and we would only look at solutions from vendors with good reputations. We wouldn't buy and maintain new equipment with a cloud solution. It would be in someone else's hands. Given our size, it may be the way to go.

As for the mindSHIFT, we are about to finish our contract with them. Given our relationship through this last event, I, personally would not agree to continue with them. We will need to find some solution.

Who will do it then? I am the Transit Center Manager and we were greatly challenged during this situation as I had to run the Transit Center and try to work on computer issues and the same time. I wanted to help the best I could, but it was too much for me. I don't have the time to research the newest technologies and keep up with the education that is needed to keep our network running in my current position.

We could find another computer vendor and make sure they know that we need network and backup monitoring. We could hire a person to do monitor our network but I don't think we have enough work, with RideCare gone, to keep a full time person busy. The last solution is the cloud idea above. A tough decision will need to be made but someone needs to monitor the network.

Disappointment with Network Vendor

One thing we were disappointed in mindShift was their snarky attitude about our backups. They made us feel that we had no backups available and that we would need to start our network with no data. I didn't feel their technicians worked very hard to find our data. Also, they kept selling their backup solution as they are not allowed to help us with non mindShift backup solutions. This gave us a false sense of security of the backups in general, especially the cloud backups by Mozy. We felt that a company that provided network monitoring would also monitor backups.

Also, they mentioned to us about data restoration but almost had us destroy our chance to restore the data. If the technician from Dell could put in the Raid card and power on the disk array, the disks would have started to format themselves to prepare for new data. The data restorers would not been able to help us at that point. Mindshift only let me know this fact as the Dell technician was there. I had to run into the room with the technician and stop him.

I felt they were more concerned about making money than they were helping us get back on our feet. I felt that I had to do a lot more than I should be doing because of their lack of motivation. I did more because I cared. Most of them didn't seem to care at all and it showed.

Conclusion

This was a bad crash. Given the age of the equipment, it was unexpected. We came out better than I expected we would come out given the equipment that was damaged. The former IT manager should be thanked for setting up local backups that kept most of the data safe. As for QuickBooks, that was unfortunate. We thought those files were backed up, but they were not. It was an expensive lesson but it won't happen again. We are doing a better job protecting our system now and looking for better ways to protect it in the future.

Executive Director Report
September 2018 Board Meeting
Jeff Hazen

-Gearhart. The shelter has been installed and a signed easement is in place. Unfortunately, after the title company recorded it at the County, the County discovered the legal description was incorrect, so we are getting it corrected.

-RideCare. It is now shut down. We have submitted our final reconciliation and reimbursement request for about $150,000. Jason has now moved on to Mobility Management full time and has hit the ground running! Donna has moved to her new role in accounts payable and payroll.

-Title VI update. We still have not received it back from ODOT yet.

-ATU. No one appealed the petition, so we are moving forward. Our legal team has been in contact with ATU and working with them to pin down a date where we can begin negotiations.

-Natural Hazards Mitigation Plan. I attended the FEMA course put on by Oregon Emergency Management on September 18th and 19th in McMinnville. This training was probably the best training that I have every had in my career. I learned a great deal and was very active in the group discussions that we had. We will be participating in the Clatsop County plan update over the next couple of years. During the last update, only the cities participated with them. As we introduced ourselves at the beginning of the course, I was pleased that one of the people sitting next to me at my table is a natural hazards planner for the state and during her introduction, she indicated that she was going to be working with Clatsop County on their upcoming update. During one of the exercises that we did at our table, we had to come up with a problem statement and then identify a project and then come up with solutions. Our table used us as an example showing that our operations center and entire fleet is within the tsunami inundation zone. I recommended that for a solution, we partner with the City of Warrenton to relocate our facility and the City's public works department to an area outside of the inundation zone. After the report out to the class, everyone got to go around to the different easels and put dots on the projects they felt were the most crucial. Ours was very highly prioritized by the class. I believe I opened the eyes of everyone regarding transit and their participation in disasters. They all understand public works and that's why I made a recommendation to do a joint facility. Once the plan is in place, there are funding programs through FEMA that we can apply for assistance in mitigation projects. Being at the table during our update should help get whatever projects we come up with prioritized.

-Bus Stop Amenities. At last month's meeting, Commissioner Alegria questioned why we referred to fixtures at bus stops as amenities. She felt they should be called infrastructure. Our LRCTP refers to them as amenities. I have included a table from the LRCTP plan showing that wording at the end of my report. I also did a search and have attached a thesis from the University of North Carolina that also refers to them as amenities. The thesis is a very

interesting read. Amenities is the common term used in the United States. Infrastructure appears to be used by some other countries such as New Zealand.

Weekly Reports:

9/18/18
Last week I attended the County Planning Commission meeting where they held a hearing on the Dollar General proposal for Knappa. As you may recall, we worked with the County and the developer to make an installation of a bus stop and shelter a condition of approval for the project. They were seeking a Comprehensive Plan amendment to allow them to build a 9100 sq. ft building. Currently, the plan only allows a building with a maximum of 4000 sq. ft. The Planning Commission voted unanimously to recommend to the Board of Commissioners that an amendment to the County Comprehensive not be approved.

I was interviewed by staff from Jacobs (formerly known as CH2M) about the new TnexT program that was developed by OSU for ODOT. They were looking for input on the tool and what agencies would want from it. I don't know very much about it at this point but in a nutshell, it will give us data such as:
1. Percentage of communities (census places with population with population >2500) that are connected to the statewide transit network
2. 4 Metrics Related to Amtrak Cascades Connectivity
3. Percentage of people 65+, with income <= federal poverty level, or with disability, who are within a .5 of a transit stop at various levels of service.
4. Percentage of the general population, employees, and jobs which are within a .5 of a transit stop served by moderate to high frequency service.
5. Public transportation revenue hours/miles per capita per year.
6. Wednesday, Saturday, and Sunday service hours/miles.
7. Avoided annual vehicle miles traveled (VMT).
8. Percentage of the population who live in rural areas which provide access to a transit stop compared to urban areas and the state average.
9. System wide frequency (service miles divided by route miles) for Wednesday, Saturday, Sunday.

On Friday, I took a vacation day and traveled to Newberg to play in the SDAO Member Appreciation Golf Tournament. It was a great event with participants from all over Oregon. They use the proceeds from the event to fund scholarships for Districts that need financial assistance to attend trainings. Last year, they raised $10,000 from the tournament, this year it was $15,000. On a personal note, as we were waiting for the tournament to start, a gentleman came up to me and says, Jeff? It was one of my teachers from junior high in Reedsport that I hadn't seen in nearly 45 years! We had a great time after the tournament catching up!

While at the tournament, I spoke with one of our insurance agents from Brown and Brown lamenting our problem that we had with our servers and the lack of backup that we had been

paying for. He gave me the name of an attorney that specializes in cyber issues to see if he could help us. We did recover the Mozy logs and are waiting for their tech's response.

At last week's PTAC meeting, it was announced that Julie Brown has been appointed by the Governor to serve on the Oregon Transportation Commission. This is a huge win for transit, Julie is the general manager of Rogue Valley Transportation District and was the driving force for the transit piece in last year's transportation bill. Also announced last week, Tammy Baney, who serves as the Chair of the OTC, has been selected as the new Executive Director for the Central Oregon Intergovernmental Council. They operate central Oregon's transit service. Another huge win for transit!

I am in McMinnville today and tomorrow attending the Natural Hazards Mitigation Plan Course that SDAO let us know about. This will help us tie in with the County's plan that they will be updating over the next few years. Next week, Paul and I will be meeting with the County's emergency management team for a desktop exercise on disaster response.

8/31/18

Good morning, here is an update on where we are at with our network.

Most of our drives have been restored so we have access to our data. Unfortunately, our QuickBooks is not. On Tuesday, Paul took the hardware to a data recovery service in Portland. They will go in and see if the files are in there. If they are, we will get a quote on how much it will cost to recover them. It won't be cheap, but it will be necessary. We should know if the files can be recovered next week, both Paul and I are optimistic that they can be recovered. When we had a failure a few years ago, Konnor had signed us up with Mozy to do automatic backups daily. We learned this week that the last back up was on 9/12/16 and apparently there was an issue with that backup. In talking with the tech from Mozy, he indicated that even if there was a problem with that backup, it should not have interrupted the daily backups. He needs to see the logs and they are lost so we are having the data recovery service find them as well. They never notified us of the issue in 2016 and they have never let us know that we weren't being backed up. We will be looking at what our recourse is with them. Paul and John are now looking at other alternatives for our system, such as moving away from onsite servers and going to a 100% cloud-based system to see if it would benefit us in the long run.

Also, I will be on vacation next week so if you need anything, please get ahold of Paul.

8/27/18

Only one thing to report since the Board just met on Thursday. On Friday at 5:00 am, I received a call from the mindSHIFT operations center. They were having difficulty accessing our systems and needed someone one onsite to assist them. John responded and worked with them to no avail. We authorized them to send a tech and he arrived in the afternoon. We have a system failure and are not able to access any of our drives and the files contained in them. The servers are under warranty with Dell and mindSHIFT will be working with Dell over the next few days to work through the issues. The tech found some of our data because it was designed to

work on the network, but until we have a working network, we won't be able to verify if all of the data is still there. Dell will be installing a new disc array on Tuesday.

8/21/18
Jason was off last week on a very well-deserved vacation. RideCare just has a few last strings to take care of so we are on target to be closed down by the 31st. Donna has been coming over to Astoria periodically to start learning a few things in her upcoming new role. The deadline for any appeals for the representation petition was Friday and there were none filed. We'll be talking with our attorneys soon on the next steps in preparation for negotiations. Paul has been diligently working on planning summer routes to account for traffic delays and help increase our on-time performance with time points that will be much more accurate. We may be running into an issue with the Lower Columbia Connector route and funding for it. I am currently working with Columbia County on it and should have an update at the meeting this week. Joining the five of you who will be going to the OPTC in October will be Mary, Jason, Tracy, Jennifer, Matt, and me. We will all ride together in one of the Transit vans for a comfortable ride to Bend. Details on the trip plan will come out later.

Strategic Priorities Monthly Update:

2017-2019 SETD Strategic Plan

Priority One

- Benchmark Services
    - Ridership increases & Decreases **Goal = +15% YTD = +4%**
    - On-time Performance **Goal = 95% August on-time performance was 38.3% Tillamook was 45.3%.**
    - Fleet reliability **Goal = Less than 10 breakdowns per 100,000 miles. Tracking not in place yet.**
    - Employee Retention statistic **Goal = Less than 20% turnover. YTD = 16.3%**

- Develop a SETD specific emergency plan. **Safety committee tasked with updating current plans.**
    - SETD operational specific emergency operation plan
        - Medical emergencies
        - Accidents
        - Behavioral emergencies at facilities and on buses
        - Emergency contact and reporting requirements
    - Strategic county wide transportation plan that integrates into Clatsop County Emergency Plan. **MOU in place with Clatsop County Emergency Management. Tabletop exercise scheduled for 9/26/18. Participating in the Natural Hazards Mitigation Plan update with the county.**

- Complete a feasibility study including associated cost to include

- Adding Columbia County services into SETD **Completed**
- Increasing services **New transportation package will provide funding in 2019 to allow for additional services. Will be submitting our STIF plan by April 1, 2019. Will receive funding in October, 2019.**
    - Fixed routes **Added 2 additional loops on each weekend day of the Pacific Connector and add another loop on Route 20 M-F.**
    - Para-transit
    - Dial-a-ride
    - RideCare **No longer Relevent**
- Improving System
    - Improved lighting at bus shelters **Will look at budgeting next year.**
    - Route on-time performances **Now reporting.**
    - Amenities **Added temporary trash cans at Safeway stops. New shelter installed by developer in Gearhart.**
- Technologies
    - Real-time bus tracking **Completed**
    - Website **Completed. Received 1st place in NRTAP nationwide contest.**
    - Mobile apps **Transit Completed**
    - E-fare **In budget for this fiscal year.**
    - Credit cards **Completed**
    - Electronic charging stations
    - On-board wi-fi
- Improve Appearance
    - Buses **Currently recruiting for a lot attendant.**
    - Shelters **Completed but ongoing.**
    - Facilities **Major headway made at the Warrenton facility. Transit Center Parking lot restriped professionally.**
    - Employees **New shirts and hats distributed to drivers.**

Priority Two

- Increase employee recruitment and retention
    - Develop SETD succession plan **COO designated ED backup. New Mobility Manager in place. New payroll/ap clerk.**
    - Identify on-going training opportunities at all levels **Ongoing.**
    - Update job descriptions
    - Develop employee incentive programs **Gift card program in place.**
    - Conduct market compensation reviews
    - Employee rewards
        - Hats
        - Pins
        - Shirts

Priority Two (cont.)

- Increase District Relevancy **Several positive press articles during FY 2018.**
    - Greater awareness of the District Services
        - Who
        - What
        - When
        - Where
    - Accessibility
    - Information about all things SETD services
    - Create a positive culture **New leadership has made a positive difference.**
        - Define Sunset Empire Transportation District
        - Establish expectation
        - Raise the bar **Ongoing in all aspects of the business**

Priority Three

- Develop capital replacement Plan
    - Fleet **Replacement plan has been in place.**
    - Technology **In place**
    - Facilities **Received FTA training on real estate requirements. Natural Hazards Mitigation Plan with county.**
- Identify new funding opportunities
    - Review fares **Completed**
    - Seek public/private partnerships **Working with college.**
    - Volunteers
    - Analyze current non-emergency medical transportation services for potential increased or new revenue **No longer relevant**
    - Continue to explore new Federal/State/Local grant opportunities **Ongoing.**
- Implement current budget process **Completed for FY 2019**

Figure 9-6 Amenity Standards and Benchmarks

	Tier 1: Basic Bus Stop	Tier 2: Major Bus Stop with Shelter	Tier 3: Enhanced Bus Stop
Examples of Uses	▪ Typical stop with a concrete pad, route sign, map/schedule, and information in Braille	▪ High Use Stops, Transfer Point	▪ Transit Centers, Highest ridership location, Park-and-Ride
Example Location	▪ Geno's, Crest Motel	▪ Midtown Cannon Beach; Rainier; Sunset Beach; Emerald Heights; Tongue Point	▪ Transit Center in Astoria; Seaside Cinema; Fred Meyer hub; Clatsop Community College
Ridership	▪ Low = <10 Daily Boardings	▪ Medium = 10-25 Daily Boardings	▪ High = >25 Daily Boardings
Required / Preferred Elements[1]	▪ Concrete landing pad ▪ Route sign ▪ Schedule ▪ Lighting ▪ Continuous pedestrian access ▪ Well-maintained pull-off location (if stop is a pull-off)	▪ Concrete landing pad ▪ Route sign ▪ Schedule ▪ Lighting ▪ Continuous pedestrian access ▪ Well-maintained pull-off location (if stop is a pull-off) ▪ Shelter / seating	▪ Concrete landing pad ▪ Route sign ▪ System map / Schedule ▪ Lighting ▪ Continuous pedestrian access ▪ Well-maintained pull-off location (if stop is a pull-off) ▪ High-capacity shelter(s) ▪ Trash can ▪ Designated park and ride spaces
Optional Elements	▪ System map / schedules ▪ Bench ▪	▪ System map / schedules ▪ Secure bicycle parking ▪ Trash can	▪ Real-time information ▪ Secure bicycle parking ▪ Placemaking / art ▪ Solar shelters ▪ Solar lighting
Photo Examples			

Notes for all tables:

[1] Standards are preliminary thresholds of acceptable performance based on peer systems and industry norms.
[2] Includes main intercity routes such as Connector routes or Route 101.
[3] Represents a Title VI required measure (system-wide service standard per FTA Circular 4702.1B). FTA does not prescribe the benchmark itself, but the tracking of such metrics.
[4] Data source: March 2015-February 2016, provided by SETD
[5] Peer ACS data: Redwood (Del Norte Co, CA): 0.8%; Columbia Co, WA: 0.9%; Lincoln Co, OR: 1.7%; Tillamook Co, OR: 0.9%; Grays Harbor Co, WA: 1.7%; Jefferson Co, WA: 1.9%; Pacific Co, WA: 0.6%
[6] Based on Rural National Transit Database Reporting, for all services (Fixed-route plus demand-response).
[7] Data source: March 2015-February 2016. SETD is currently correcting how this data was originally classified.

TALBOTT, MATTHEW R., M.A. Bus Stop Amenities and their Relationship with Ridership: A Transportation Equity Approach. (2011)
Directed by Dr. Selima Sultana. 148 pp.

This thesis examines the spatial distributions of bus stop amenities from the perspectives of transportation equity to determine whether they are being located in areas where they are needed the most as well as to analyze their amenities or lack thereof and the effect they might have on ridership. While much of the prior literature regarding bus ridership examined how the location of transit stops, scheduling, pollution and the urban built environment affect ridership, there is little to no research on how bus stop amenities can affect ridership. It can be expected that a bus stop with poor amenities will have less ridership than that of one with proper amenities. Bus stop amenities can consist of benches, shelter, proper signage, garbage cans, appropriate sidewalks and ramps, and proper lighting. However, bus stop amenities are not consistent throughout the service area, as some bus stops may have a shelter with a bench while others may have only a simple pole with sign. Greensboro, Kansas City and Seattle are used as case studies for this research. Data was collected from each city's regional transit authority, encompassing the amount of riders at each bus stop and their amenities over a one-year period. In addition, the socioeconomic characteristics of residents by block group are taken from census block group data. After the thorough examination of the spatial as well as the statistical analyses, this thesis suggest a fair distribution of bus stops and their associated amenities in areas of the transportation disadvantaged with few exceptions. This research concludes that better amenities increases ridership and the most important amenity that factors in with higher ridership is shelter.

BUS STOP AMENTIES AND THEIR RELATIONSHIP WITH RIDERSHIP: A TRANSPORTATION EQUITY APPROACH

By

Matthew R. Talbott

A Thesis Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Greensboro
2011

Approved by

Selima Sultana
Committee Chair

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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Date of Final Oral Examination

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CHAPTER I

INTRODUCTION

1.1 Purpose

The purpose of this thesis is to examine the spatial distributions of bus stop amenities from the perspectives of transportation equity, to determine whether they are being located in areas where they are needed the most as well as to analyze their amenities, or lack thereof, and the effect they might have on ridership. An initial visual survey suggests that bus stop amenities consist of benches, shelter, proper signage, garbage cans, route maps, appropriate sidewalks and ramps (recommended by Americans with Disabilities Act guidelines of 1990), and proper lighting, etc. The idea of waiting at a bus stop for many people may cause trepidation of inconvenient and unsafe conditions, such as enduring detrimental weather and waiting in an unsafe environment. This is especially true given the fact that not all buses run on time which forces a rider to wait even longer in these conditions (TCRP, 1999). In my observations, bus stop amenities are not always dispersed in an even fashion. Some bus stops may lack the amenities of others possibly because of prior estimates in the fluctuation of ridership at each stop (Fitzpatrick et al, 1997). Some bus stops consist of a shelter with a bench while others may only consist of a simple pole and sign. Not only do bus stops need to be improved in order to increase and maintain ridership, they should also provide equal accessibility each

and every citizen (Fitzpatrick et al, 1997). However, there is no empirical evidence that suggests this.

This topic is critical for changing public transportation in the U.S. One can only assume, due to the increase in fuel prices and the ever popular idea of preserving the environment that ridership of public transit and alternative forms of transportation might increase. Most government officials, particularly Department of Transportation officials, encourage public transit or other forms of transportation. It not only can save the average citizen money, but can also provide for a lucrative asset for the government. If more citizens used public transit or other forms of transportation, such as biking or walking, government officials would have more funds to allot to other fields (Smart et al, 2000). With oil prices rising, fewer cars on the road would decrease infrastructure restoration in the future, especially since asphalt prices will rise because of oil. Therefore, it is imperative for government officials to realize the need for appropriate transit stops, especially bus stops. This thesis assumes that if every bus stop was appropriately delegated the same high level of amenities, there would be an expected increase in ridership.

Transportation equity (also known as social justice or fairness) issues have also been taken into consideration in this research to verify whether or not bus stop locations and amenities are accessible to all races, income levels, and the disabled. Since the early 1980s, transportation equity has been a concept to ensure transportation related impacts (benefits and costs) that are fairly distributed to all demographics (Litman, 2011), especially to the people of socio-economically disadvantaged groups who ride the bus

(Battelle, 2000). Many Americans live with some type of disability, such as sensory impairment. These citizens also ride transit systems and require special amenities to help them in the public transit system. The transportation equity topic will be further discussed in the literature review section. For an increase in ridership or even consistent ridership that is equally accessible to everyone, a bus system should be required to provide some if not all of the formerly mentioned amenities (Marston, 2000). This research will analyze these concepts to better understand bus stop amenities affecting ridership and the fair distribution of said amenities. One can only assume that a bus stop with poor amenities will have less ridership than one with full amenities; however, there is a lack of research to support this idea, and, therefore, it remains an untested hypothesis.

1.2 Research Questions

There is a copious amount of literature involving bus stops and ridership (e.g., TCRP 1999, Corfa et al., 2004), but there is little to no examination of how the bus stop design and location can affect ridership levels. Much of the literature regarding bus stops explores the issues of location of stops, how scheduling can affect ridership, how pollution can affect ridership, and how the urban environment can affect ridership (Bouzaiene-Ayari et al, 2001). There is also a dearth of literature regarding bus stops and amenities being evenly distributed to all demographic groups and to those who need them. Throughout many metro or regional transit systems, there is an inconsistent pattern of amenities per stop. Many transit stops may have a shelter and bench, while others may consist of only a sign (Figure 1.1 and 1.2). This thesis will, thus, examine following

questions to better understand the relationship between bus stop amenities and ridership: (1) Are the locations of bus stops and their associated amenities distributed evenly across the areas to serve everyone or are they located in areas and communities where the demographic trend leans towards a greater need for transit especially to the transportation disadvantaged such as lower income and minorities? (2) Are ADA approved bus stops proportional to areas where people with disabilities are located and is this population being served equally by the transit system? (3) Will the amenities of bus stops have an effect on overall ridership and if so, what amenities are the most important factors for predicting bus ridership? (4) Are bus stops with higher level of amenities associated with more ridership?

Figure 1.1: Bus Stop with Poor Amenities

Figure 1.2: Bus Stop with Good Amenities

Source: Both Photographs are taken by the Author, Matt Talbott, 2011

CHAPTER II

LITERATURE REVIEW

In order to thoroughly examine how amenities of bus stops can affect ridership, one must review existing research relating to this field. As mentioned in the introduction, prior research does not specifically tackle the idea of bus stop amenities and ridership. Instead, the literature that exists involves other factors and variables that may help or hinder transit ridership as a whole. These variables range from pollution, scheduling, and bus stop spacing, to crime rates, the urban environment, as well as urban form. Some literature examines the political forces that can make it difficult for the transit authorities to implement transit stops and stations with good amenities and connectivity, travel behavior of immigrants and minorities, and the transportation disadvantaged. The goal of this research is to examine each of these factors to provide a better idea of how different variables may or may not affect ridership as well as the transportation equity aspect of the locations of the bus stops.

2.1 Characteristics in Building Transit Ridership: What are Transit Amenities?

After investigating much literature regarding this topic, only one piece could be found that was directly related to the research being conducted about amenities and ridership. In 1999, the Transit Cooperative Research Program (TCRP) conducted a study. This study was sponsored by The Federal Transit Administration. The report is

titled *The Role of Transit Amenities and Vehicle Characteristics in Building Transit Ridership: Amenities for Transit Handbook and The Transit Design Game Workbook.* Although this report is titled as more of a handbook and workbook, there are case studies and empirical data which can be related to the findings in the research presented in this paper. The handbook part of this report attempts to identify amenities and express how they, as well as transit vehicle characteristics, attract ridership. It also investigates how amenities may affect ridership. The workbook section of this report incorporates information gathered from passenger surveys, discussion sessions, focus groups, and transit agency staff on the effect of recently implemented amenities on passengers. There is a growing interest in enhancing all stages of the transit experience by improving vehicle design characteristics and providing amenities. This is due to transit systems striving to maintain and increase ridership. The transit agencies need to maximize the effect of investments by focusing resources on those amenities that will have the greatest positive effect on ridership (TCRP, 1999).

This report states that one transit manager told them that "amenities would have to jump up to make it to the bottom of my priority list." Although this is one transit manger's opinion, there are more and more transit agencies that are trying to break out of the mold and change the way they provide service for their passengers. These transit agencies have shown that investing in amenities to increase ridership can be a cost-effective option instead of reducing service or eliminating amenities in order to cut costs-measures that can create a continuing downward spiral (TCRP, 1999). The report presents the findings and conclusions of a two year research effort analyzing the role

played by amenities and design features at transit stops and vehicles in building transit relationship. TCRP states that while all types of transit were considered in the work, there was a special emphasis placed on buses and bus stops. This is because the bus system carries the most transit riders in the U.S. (TCRP, 1999).

Before the findings and conclusions of this report are delved into, TCRP (1999) explains that there were key lessons learned in this project that are significant because they counter numerous misconceptions that transit agencies have about amenities. The counters of misconceptions are listed below:

- **Passengers actually react positively to amenities which are designed to improve their transit experience:** When amenities are well placed and well designed, passengers appreciate them. Amenities can help to infuse rider confidence in the transit agency. It can also increase passenger optimism in regards to the quality of future transit improvements and service.
- **Amenities can impact a wide range of passenger experience as well as the ridership decision of passengers:** One of the most targeted customers for increasing ridership, infrequent riders, showed significant interest in amenities in the case study surveys. Amenities do not only make transit passengers more comfortable, but safer and more efficient with lighting and security cameras. Amenities can also impact new rider perception of transit as a transportation option for themselves

- **Amenities are not as expensive as perceived:** When serving passengers with disabilities, amenities such as low floor buses can save money over wheelchair lifts and on-call van service. Also, means to pay for amenities can be quite diverse and can include options other than advertising. Developing public/private partnerships with local communities, businesses and governments and redefining the way transit agencies traditionally work with manufactures can offset the costs of providing amenities
- **Transit agencies that have applied improvement projects are more likely to have actively sought and attempted to address other customer concerns, as well:** This is apparent in some simple yet efficient steps that agencies are taking to assess customer concerns. These can be accomplished in focus groups, surveys, and other methods. These are critical in determining whether or not a particular amenity should be considered. Amenity projects can then become part of a total program geared toward providing customer-friendly service
- **To know which amenities passengers want most and to determine their willingness to pay for them can help the agency decide which amenities to offer and implement:** A design guideline by TRCP titled the *Transit Design Game,* plus passenger surveys developed in this report, can be of service to transit agencies in general and amenity program planners in particular. They state that the *Transit Design Game* is not a final set of guidelines. These guidelines are a planning tool for agencies

which can be used over time to facilitate ongoing passenger surveying activities to ascertain or predict rider preferences for particular amenities.

- **The agencies that have embarked on amenity programs tend to believe that the benefits to passengers, adjacent communities, people with disabilities, and the agency itself far outweigh the costs:** While the TCRP found agencies that would implement projects differently, almost all transit agencies contacted for this report felt that their investment in amenities was a worthwhile one, even if a direct ridership impact could not be immediately measured.

The TCRP, in this report, deal with the issues surrounding what exactly amenities are. They also discuss the idea of what works and how and whether or not amenities are a worthwhile investment. There exists no uniform procedure to guide decisions regarding amenities. There is no agreement upon how to define or interpret what an amenity is, therefore TCRP clarify the underlying assumptions regarding the meaning of the term “amenity” and explain the context in which the project was conducted. Some people associate amenity with “frill” or “extra” according to TCRP. This is a misunderstanding. Whereas some amenities can be a luxury, most amenities are practical features that passengers find attractive and which may have a positive effect on ridership. Amenities are often viewed as something that can be simply added to a vehicle or transit stop after the fact of implementation. Usually the design decisions are made by engineers and maintenance departments, but neither is usually trained to understand

passenger needs. Some transit agencies take an approach by incorporating new features that often cost no more to provide than the "basics." The Metro system in Seattle re-thought the transit vehicle's basic design and function to design a better bus that costs no more to build than existing ones, rather than adding amenities to an existing bus (TCRP, 1999).

In this report, the TCRP (1999) created an amenity checklist. This checklist was divided into amenities for the waiting environment and amenities for the vehicle environment. This checklist is listed below:

Waiting Environment: The waiting environment can include access to the station or stop, circulation within the area and movement into and out of the train or bus, the waiting space, and the amenities in these areas:

- Seating or places for people to lean
- Shelter from the weather
- Lighting of the shelter and adjacent areas
- Information systems (signs, maps, and schedules to electronic, updateable information about actual vehicle arrival times);
- Telephones and trashcans
- Special features for people with disabilities such as ramps, elevators, railings, bathrooms, signage, and accessible heights for services like ticket booths

- Proximity to retail and other civic activities and uses (libraries, art exhibits and recycling centers, etc.)

Vehicle Environment: the vehicle environment can include the space and facilities that are provided for people to board or leave the vehicle. This can also be the space where people stand and circulate on board, sit, get information and pay their fare. Among the features and approaches of the vehicle environments are:

- Circulation into and throughout the vehicle (arrangement of doors and seating)
- Types of seating (padding, height of the seat back, provision of armrest, type of fabric or material)
- On-vehicle passenger information displays (visual and audible information about route number and name; next stop, key destination, upcoming stops and connecting route announcements)
- Better vehicle access using low floor technology
- Lighting
- Climate control and ventilation
- Security cameras
- A quieter and smoother ride
- Multi-modal features (bike racks)
- Storage facilities (package racks)

- Driver courtesy and assistance

The TCRP (1999) used methods such as focus groups, on-site surveys, interviews with transit operating staff, and behavioral observations to conduct five different case studies for on-board vehicle and waiting environments. They concluded that buses and bus stops represent comparably modest investments on the part of a transit agency versus rail vehicle and facilities, which are much more costly to purchase and upgrade. The case studies demonstrate that much can be achieved given limited budgets for a transit agency. Quality amenity programs require a different way of doing business for a transit agency, one that will involve the customer in helping to make decisions about service and facilities. Also, the most successful amenity programs projects were those in which partnerships were created among transit agencies, other city agencies, state and deferral government, local merchant and community groups, and equipment manufacturers and designers to accomplish more than the transit agency could accomplish by itself (TCRP. 1999). This report includes very important information that about attitudes and opinions passengers and agencies have towards amenities that can be supplemented into the research done in this paper, but does not present actual data to determine any quantitative evidence that amenities and ridership can affect one another, therefore further research must be undertaken.

2.2 Bus Stop Design and Network Modeling

The focus of the most abundant literature is the idea of the modeling of bus systems and the overall design of the actual bus stops. There are several factors which need to be considered when selecting a bus stop location and design. Comprehensive guidelines are needed because reference material relating specifically to bus stop location and design is limited and not located in a single document. Transit agencies, cities, developers and other interested parties who have a stake in bus stops would benefit from having a single comprehensive reference document (Fitzpatrick et al, 1997).

The primary objective of Transit Cooperative Research Program Project A-10 (TCRP) of 1999 was the development of guidelines on locating and designing bus stops. The research performed during the project used several different techniques to develop the guideline materials. Written documents from transit agencies and literature on the American with Disabilities Act were reviewed. Information on transit agency practices were obtained from their manuals, a mail-out survey, a phone survey, face-to-face interviews and observations of existing bus stops. Pedestrian and vehicle behavior at existing bus stops were gathered during data collection efforts at 19 different bus stops. Computer simulation was used to investigate the effects of bus stop design on traffic operations of suburban arterials. The final report, which documents the research, creates guideline information on bus stop location and design (Fitzpatrick et al, 1997).

However, this paper did not focus on the aspect of bus stop amenities and their relationship with ridership, but it does give a good guideline as to how to properly design and locate bus stops. Before the research of Fitzpatrick, there was no single document

outlining how bus stops should be located and designed. With the help of the Institute of Transportation Engineers, there is now a single document that will help in the location and design decisions. This can be a helpful factor that will allow bus stops to appeal to more riders and hopefully increase ridership.

Another aspect discussed in prior literature about bus stops is the idea of modeling bus stops in a transit network. Passenger assignment problems in transit networks have been the subject of many studies in the last four decades. Various assignment models have been proposed to predict passenger behavior in such networks in order to analyze improved public transportation service in large cities and metropolitan areas. Among these are equilibrium assignment models which have been applied to real-life large scale problems (Bouzaiene-Ayari et al, 2001). Most recent studies on the subject assume that passengers use path selection strategies to get to their destinations rather than shortest single routes or itineraries. In Bouzaiene-Ayari et al's (2001) paper, they define a strategy as the choice of sets of (possibly divergent) attractive lines at reached bus stops that allow the passenger to reach his/her destination. The outcome of such a choice is a set of simple itineraries that can diverge, only at bus stops, along the attractive lines.

In this research, Bouzaiene-Ayari et al (2001) also undertook an extended and detailed study of the bus stop problem in transit networks in order to propose a bus stop model that can be used to predict the passenger global behavior in such networks. In general, the main existing stop models do not perform well especially when dealing with congested transit stops with multiple servers. If the line waiting time functions used are

well defined functions which are sensitive to all line parameters (frequencies, capacities, headway distributions, line congestion), then all these parameters will have an impact on both the passenger distribution between attractive lines and the net passenger waiting times. One conclusion they determined was that a more attractive bus line would increase ridership (Bouzaiene-Ayari et al, 2001). The only problem with this research is that they do not acknowledge the idea of the bus stops themselves with their amenities and how that can affect ridership. They focus only on the attractiveness of the line, the bus and the location rather than what is around the bus stop and what types of amenities are around.

Loukaitou-Sideris (2001) surveyed 474 riders waiting for the bus at ten bus stop sites in the South Bay area. The surveys were to gather a perception of the public's opinion of bus stop design and amenities. The surveys took place between 8:00 a.m. and 6:00 p.m. To obtain a representative sample of South Bay bus riders, all bus stop sites were surveyed during the early morning, mid-day, early and late afternoon hours on weekdays and Saturdays.The survey instrument was composed of twenty-four questions designed to identify 1) the socio-demographic characteristics of South Bay bus riders; 2) frequency, purpose, and time of bus trips; 3) level of satisfaction with the existing bus service and bus stop amenities; 4) desirable bus stop amenities; 5) perceived safety on the bus and at the bus stop; 6) problems encountered at the bus stop; and 7) suggested improvements that could also act as incentives for increased ridership. The overall purpose of the surveys was to get an idea of what types of people ride the buses and how they would improve the system (Loukaitou-Sideris, 2001).

Loukaitou-Sideris, (2001), however, did not find many complaints in regards to the transit amenities offered at the bus stops. Some complaints were context-specific (e.g. the presence of homeless and transients in South Bay Galleria; the placement of the bus stop very near the street and poor lighting at specific locations; the inadequacy of the shelter to protect from rain in South Bay Galleria; the lack of a shelter at certain areas. Bus shelters, benches, trashcans, and proper lighting were deemed as the most important amenities at the bus stop. Although this research is informative, it is only for that particular area. It can be assumed that shelters, benches, trashcans, and lighting would be the most important amenities people would want. What the authors failed to analyze is if the areas that lack these amenities suffer from a decrease in ridership or not. This should be the case if these amenities are important to those particular people.

Another topic involving bus stop amenities is the architectural design of the actual bus stops. Slessor (2002) reviewed new designs of bus stops in Bradford, England. The reason for this article is that bus travel is regarded as the cheapest and most marginalized form of transport, and structures and interchanges associated with it tend to be designed with an emphasis on economy rather than imagination. The author stated that waiting for a bus is rarely time spent in civilized or stimulating conditions.

In Bradford, England, however, the role of the bus stop has been seriously re-evaluated. Culture Company, an arts organization, assembled a team of architects, artists and engineers to re-examine and transform the smallest and often most neglected element of transport infrastructure. The outcome was a series of eye-catching shelters that enhance and dignify bus travel and make a strong statement in the urban environment. In

collaboration with artists, architect Bauman Lyons designed six new shelters. The shelters share a common language of contorted metal planes and vivid color. Two of the structures are topped with a wind charger that generates power to warm seats inside. Two of the shelters were designed with "songs of color," which reflects the hues worn by people passing by, creating an intriguing ephemeral sound environment. For another shelter a 24 hour text was devised that unfolds line by line on a digital display for passengers to contemplate as they wait for their buses. Although these ideas for designs are great and they probably do increase ridership, there needs to be empirical evidence to determine if designs like these will increase ridership (Slessor, 2002).

2.3 Air and Noise Pollution at Bus Stops

Other prior literature focuses on air pollution and noise pollution and how they can affect the bus system as a whole. The first literature to be discussed is by C.H. Chew (1998). It focuses on ways to reduce the ambient noise level of this type of bus station (an integrated bus/rail station), which is higher than the conventional open type bus station. Although the focus of this paper was coming up with different ways to reduce this ambient noise level, he also investigated bus/rail stations where the bus station is on top of the rail station (Chew, 1998).

To further encourage more people to use public transport so as to relieve the traffic congestion, the concept of an integrated bus/rail station is being promoted. The present concept is to build the bus station below the train station. The first integrated bus/rail station has been completed and is in operation presently. The strong point in

favor of the above system is the relative ease of commuters to transfer from bus to train and vice versa. Another advantage of the system is that commuters will not get wet when it rains. It also helps in optimizing the land use. Since its inception, the concept has been well received. However, the only drawback is the higher ambient noise level experienced in this bus station compared to the usual more open type of bus station. Therefore, Chew's (1998) study has been carried out to measure the noise levels in order to help reduce them; it gives a good perspective of new ways to improve bus stations to keep riders on the lines. The author did mention how these stations would keep riders out of bad weather and other unsafe environments, but the author was not able to measure the ridership levels in order to determine if these station increase or decrease ridership.

Another literature involves air pollution and how it can affect bus riders. Corfa et al. (2004) examine and analyze air pollution at railway and bus stations in order to determine if pollution is higher at these locations. The purpose of their research is to be able to model air pollution to determine if these stations produce more air pollution and, if so what can be done to hinder it? The authors express that because air quality issues concern an increasing part of the population, more answers are needed and, therefore modeling is needed. Although in their conclusion they did determine that air pollution was higher in rail and bus stations, they failed to examine was if the higher pollution at these stations results in lower ridership numbers (Corfa et al, 2004). One would assume that this would be the case, but there needs to be empirical evidence to prove it. The idea of pollution affecting ridership will not be discussed in this paper due to lack of data, but should be examined in future research.

2.4 Crime Rates and Child Safety at Bus Stops

Another area of literature focuses on crime rates and the safety of children around bus stops. R. Unger et al. (2001) study the injuries at bus or tram stops that were analyzed retrospectively by the authors in order to analyze and to create guidelines for prevention. The reason for this research is because in Austria the yearly mortality rate of child pedestrians is 0.66 out of 100,000 children aged between 0 and 14 years. Prompted by some severe child pedestrian accidents in the area of bus and tram stops, the authors decided to analyze this kind of child pedestrian injuries. Some studies describe the occurrence of these injuries but there are only few studies which examine the causes and of such injuries. It is the aim of this study to create guidelines for injury prevention by retrospective analysis of these injuries in order to highlight cause, mode and type of injury as well as physical injuries and post-traumatic behavioral disturbances of pedestrian injuries close to bus or tram stops (Unger et al, 2001).

Medical records were analyzed and questionnaires were sent to the parents in order to obtain detailed information about the mode and physical injury or post-traumatic behavioral disturbances of the injury. Crossing the road from behind a bus or a tram in the area of a bus/tram stop is extremely dangerous. It is mandatory to increase the safety at bus stops along crowded bus stops, which can cause severe injuries trying to get a free seat, even though there is only standing room for most passengers. Crossing the street from behind the bus or the tram in the area of the stop is one of the main causes of these injuries. (Unger et al. 2001) The authors' findings are well organized and interesting, but they failed to analyze the idea of child injuries at bus stops and how it could affect

ridership. Another aspect they could have focused on is if these accidents were occurring because of the lack of safety amenities at the bus stop. There might be a lack of shelters and benches that could lead a child to wander into traffic or behind a bus to sustain injuries. The idea of amenities installed to deter injuries at transit stops should be researched in the future. There are no studies as of yet to observe injuries at transit stops and if better amenities could deter them.

Crime rates can also have an effect on bus riders (Anastasia Loukaitou-Sideris 1998). The reason for this research is that crime and fear of crime affect many aspects of everyday life in our cities. It holds the elderly hostage in their own homes, prevents people from using public transportation, forces merchants to close their shops early, and discourages investment, thereby increasing the cost of living, working, or operating a business (Loukaitou-Sideris, 1998).

This study focused on bus stop crime and wanted to identify the environmental attributes that can affect the bus rider's security while at the bus stop. Following the argument of criminologists that certain place characteristics can affect the incidence of crime, the study used direct observation, mapping, interviews, and surveys to examine the physical and social environment around the 10 most crime-ridden bus stops in Los Angeles during 1994 and 1995. For methodology they used qualitative and ethnographic analysis. They chose this form of methodology because it has the advantage of describing street-level interactions at a bus stop and relating them to its spatial characteristics. Their empirical research indicates that environmental attributes and site characteristics have an effect on crime. This paper only focuses on how environmental factors around bus stops

will affect crime rates (Loukaitou-Sideris, 1998). The research was interesting and well thought out but they should also compare how the environmental factors will affect crime and how that crime will affect ridership. If a bus stop is located in an environment known for its crime, a bus commuter will more than likely not wait at that particular bus stop.

2.5 Space Optimizing and Proximity of Bus Stops

Some literature centers on the idea of space optimizing and proximity of bus stops. In a study by Mezyad M. Alterkawi, 2006, a computer simulation analysis for optimizing bus stops spacing was discussed. The aim of this research is to add to the development of public transport services for a heavily car-dependent society. This paper examines an optimal structure to improve the bus system and contribute to the sustainable development of the city of Riyadh, Saudi Arabia. The analysis is based on a computer program to simulate the optimum bus stop spacing based on the field-collected data. It concludes that many of the requirements of an adequate bus system might be provided by appropriate bus stops and that these should be incorporated as part of the bus priority measures.

The paper focuses mainly on the placement of bus stops and how they can improve accessibility and mobility (Alterkawi, 2006). The reason for this research is that the provision of adequate urban transportation is a challenge for most cities worldwide. Urban transportation in the large cities of developing countries generally consists of road traffic, automobiles and other private means. Very few utilize guided mass rapid transit systems. This paper discusses a computer model developed by the author in order to examine an allocation and deployment of

bus pick-up and drop-off points in order to provide a balance between the conflicting objectives of customer service (providing for a minimum walking distance to a ‘‘bus stop’’) and ‘‘bus weaving’’ (minimizing the number of allowable bus stops in order to minimize the number of bus occurrences that a bus will be required to enter, and exit, the flow of traffic) (Alterkawi, 2006). Although this paper does determine the most efficient way to locate bus stops in order to improve the urban environment, it does not determine if poorly located bus stops will negatively affect ridership. The obvious assumption would be that poorly located bus stops will deter ridership, but there is a need for empirical evidence to support this assumption.

In regards to the formerly motioned idea of bus stop spacing, proximity is also discussed in prior literature. A paper titled Impact Proximity to Light Rail Rapid Transit on Station-area Property Values in Buffalo, New York, was authored by Daniel Baldwin Hess and Tangerine Maria Almeida. Their research examines the impact of proximity to light rail transit stations on residential property values in Buffalo, NY. Light rail has been in service for twenty years in Buffalo, but population declining and ridership is decreasing. Because the relationship between a transit system, the location of transit stations and property values are fundamental to land markets and urban structure, the authors felt the need to research this topic (Hess, 2007).

The authors constructed hedonic models of assessed value for residential properties within half a mile of 14 light rail stations; independent variables are included that describe property characteristics, neighborhood characteristics and locational amenities. The model suggests that, for homes located in the study area, every foot closer to a light rail station increases average property values by $2.31 (using geographical

straight-lined distance) and $.99 (using network distance) (Hess, 2007). Overall the authors found that the closer a property is to a transit station, the higher that property value will likely be. The authors also suggest that based on their findings they cannot claim amid economic decline and population loss, light rail transit will unequivocally increase property values and revitalize depressed neighborhoods (Hess, 2007). This paper gives good insight as to how property values can fluctuate according to their proximity to transit stations. If they would have done the same study with bus stops, they might have found the same or a different result. They could have also examined the idea of higher property values near stations or stops and if it would ultimately affect ridership levels. If it is a high property value neighborhood, will ridership increase or decrease?

2.6 Urban Form and the Urban Environment Around Bus Stops

Other ideas on ridership have to do with urban form and/or the urban environment. Estupinan and Rodrıguez (2007) performed a study of this regard because the relationship between bus transit demand and urban form remains largely unexplored; these authors felt the need to examine this. By relying on primary and secondary data analyzed with a geographic information system, this paper examines the built environment characteristics related to stop-level ridership for Bogotá's successful bus rapid transit system (Rodrıguez, 2007).

The authors state that recent research has studied the relationship between the built environment and travel behavior with the aim of identifying environmental characteristics that support decreased auto use. Common outcomes examined include

distance traveled, travel mode choice, trip frequency and use of transit. Although there is an emerging understanding of the relevance of the built environment in supporting transit use, studies have focused almost exclusively on the relationship between rail transit as well as residential and employment density (Rodrıguez, 2007).

The study results suggest environmental supports for walking and that deterrents or barriers to car use were related to higher BRT use. Also, the factors measuring environmental supports for walking and barriers to car use had the strongest predictive power of the factors analyzed. The authors' results confirm the importance of the built environment in supporting non-automobile ways of traveling generally, and bus transit in particular. Their research identified environmental features, subjectively interpreted as walking supports, which successfully predict transit use, while controlling for other attributes (Rodrıguez, 2007). Although this paper did examine how the built environment will predict other forms of transportation, it did not investigate the idea of the amenities affecting the ridership. This could be an important factor in the fluctuation of transit ridership.

2.7 Transit Stops and Stations are Usually Controlled by Numerous Entities

As mentioned before, the data collection for this research was a strenuous task due to the fact that transit organizations collect their data in a non-uniformed manner. This can be attributed to the fact that transit stops and locations are often partially or fully controlled by other governmental agencies (most frequently, local governments that control sidewalks) who may have interests different than, and sometimes at odds with,

those of transit agencies (Smart et al. 2009). A transit agency may have certain ideas and incentives for certain locations and design of bus stop locations, but they often have to meet the needs of other government agencies such as a municipality's transportation planning division or a metropolitan planning organization.

In 2009, Smart et al. developed a study on how transit managers have to consider both the political and logistical factors intrinsic to transit operations, as well as the perspectives of customers they seek to attract and maintain. They state that passengers, transit managers, adjacent businesses and residents, and local governments can all have strong and sometimes differing ideas about what makes a good transit stop or station. This can make designing and implementing necessary amenities difficult for the transit agencies. Unlike other modes of transportation, (private vehicle, bike, or by foot) public transit passengers usually have to wait for and transfer between buses and trains. Therefore, the idea of the travel time spent outside of the transit vehicles comprises an imperative, and extremely understudied, part of transit travel. However, due to the many stakeholders who have a say in the location, design, and operation of the facilities, it is a very difficult task to plan a good transit stop or station. In many cases, it is a complex interaction of different stakeholders' requests and constraints that results in the final location and design of a stop or station (Smart et al, 2009).

Transit stops are not only places to wait for a bus or train, but a place to wait and transfer, which means a passenger could be waiting and transferring throughout their commute at different stops and stations. This being said, there is a need for better amenities and better connectivity at locations with higher wait times. Usually, when

transit connectivity is poor, waits and transfers become burdensome for transit users and can discourage transit use. According to the Metropolitan Transportation Commission in 2006, poor stop and station connectivity can result in trips that are frustrating, time consuming, and costly. This can produce lowering the quality of service for users and making transit unattractive for new customers. The range and degree of wait and transfer facilities (bus stops) vary considerably. They can range from thousands of simple bus stops around the U.S. marked by a simple sign on a pole to elaborate and architecturally significant multi-modal commercial hubs (Smart et al, 2009).

This literature also delves into the idea that perceptions of how the most important aspects of transit stops and stations can vary depending on the stakeholders involved. They state that the main factors include passengers, adjacent businesses and residents, local governments, and transit agencies. Passengers are the reason for the existence of transit travel; therefore their perspectives and needs are vital. Although passenger needs should be first, transit stops and stations must also meet operational objectives. Operational objectives can consist of the stipulation of vehicle queuing and staging areas, sufficient road/rail network access, adequate vehicle/passenger separation, driver break facilities, etc. If the transit organization directly owns or controls the property where the stop or station is to be located, it can largely control the attributes to accommodate operational requirements of the stop/station. In reality, more often than not, the property is partially or fully controlled by other governmental organizations. These other governmental agencies may have interests different from those of the transit agencies. Also, no stop or station is a stand-alone facility. It has to relate and interact with adjacent

businesses and residential properties. Therefore, the maintenance of providing access, as well as generating traffic, noise, emissions, and other negative externalities, are essential and sometimes rigorous (Smart et al., 2009). While this literature and research is imperative to understanding the process and problems of implementing successful transit stops or stations with sufficient amenities and connectivity, it fails to analyze if it would actually affect ridership in any way. It also does not touch on the subject of the process and design of locating stops and stations in areas where it is likely needed the most. The need for the research presented in this thesis is crucial and can then be tied to the literature mentioned above in order to realize the true analytical nature of this beast.

2.8 Transportation Equity

In order to better understand this research's spatial distribution of bus stop amenities from the perspectives of transportation equity, this term must be clarified. According to the USDOT (2006), transportation equity was enacted through law PL 105-178, the Transportation Equity Act for the 21st Century (TEA-21). TEA-21 authorized the Federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003. Because Congress could not agree on funding levels, the Act was allowed to lapse. The transportation equity act requires several planning factors be included in regional transportation plans. Some factors include supporting the economic vitality of the metropolitan planning area, increasing transportation system's safety for motorized and non-motorized users, protecting and enhancing the environment, promoting energy conservation, and improving the quality of life. This definition for

transportation equity is defined through a governmental act, but there are other ideas and ways to define this term.

Equity can refer to the fairness with which impacts (benefits and costs) are distributed. Transportation decisions sometimes have significant equity impacts. Transport equity analysis can be difficult because there are several types of equity, numerous impacts to consider, various ways to categorize people for analysis, and many ways of measuring impacts (Litman, 2010). According to a report by the Victoria Transport Policy Institute in 2010, transportation equity is defined by three major categories:

1. Horizontal Equity: also called fairness and egalitarianism, is concerned with the distribution of impacts between individuals and groups considered equal in ability and need. Equal individuals and groups should receive equal shares of resources and be treated the same. It means that public policies should avoid favoring one individual or group over others, and that consumers should "get what they pay for and pay for what they get" from fees and taxes unless a subsidy is specifically justified.

2. Vertical Equity With Regard to Income and Social Class: also called social justice, environmental justice and social inclusion, is concerned with the distribution of impacts between individuals and groups that differ in abilities and needs by income or social class. Transport policies are equitable if they favor economically and socially disadvantaged groups, therefore compensating for overall inequities. Policies favoring disadvantaged groups are called progressive, while those that excessively burden disadvantaged people are called regressive. This definition is used to support affordable

modes, discounts and special services for economically and socially disadvantaged groups, as well as efforts to insure that disadvantaged groups do not bear an excessive share of external costs (pollution, accident risk, financial costs, etc.).

3. Vertical Equity With Regard to Mobility Need and Ability: This definition is concerned with the distribution of impacts between individuals and groups that differ in transportation ability and need and, therefore, the degree to which the transportation system meets the needs of travelers with special constraints. This definition is used to support universal design (also called accessible and inclusive design), which means that transport facilities and services accommodate people with disabilities and other special needs. This paper will look at these three transportation equity issues.

2.9 Using Technology to Help the Transportation Disadvantaged: Transportation Equality

Many disabled people use public transportation as much as non-disabled people, but sometimes this task can be a tedious and difficult one. According to the U.S. Census Bureau, 2005, there are over 54 million disabled people or about 19 percent of the United States population. Not all people reporting disabilities are severely disabled (needing help with everyday activities). Disabilities can range from eyesight disability, hearing disability, mobility disability, to cognitive disability. Many of these people work everyday and rely on public transit to get to their jobs. If the proper amenities are not located at each stop or station, getting there and waiting can be a burden. Not only do persons with disabilities have lower access to transportation or limited transportation, but

so do older adults and individuals with lower income. These populations are called the "transportation disadvantaged." These individuals need flexible and dependable routes and schedules, travel information that is easy to understand, fares that are low cost and easy to understand, as well as transportation that is safe and secure (U.S. DOT, 2006).

The report by the U.S. DOT (2006), "Improving Service for the Transportation Disadvantaged," highlights technologies such as the Intelligent Transportation System (ITS) that improve accessibility for the transportation disadvantaged. Akin to the study in the previous section, this report underlines that the challenges to implementing transit improvements and technologies is that of the coordination of goals and functions of multiple agencies. There are many obstacles to coordination, including different rules and standards among the various agencies, stakeholders, and limited guidance. This report focuses more on technological advances to improve transit for the transportation disadvantaged and not so much on the improvements of amenities. The technological improvements that are mentioned in this study will be reviewed because they can used to tie in with amenity improvements for future research.

The large population of transportation disadvantaged people are usually without access to private vehicles, which brings about concerns of how to find alternative forms of transportation, low fares that are easily understood and pay, security and safety, sufficient service coverage, reasonable journey times, and convenient schedules. These needs are sometimes coordinated by small agencies using phone, fax, pegboard, and so on; however, the demand for transportation services is on the rise across the country, which means the need for technological advances is becoming apparent. Managing

services among various transportation providers is a considerable test given the different goals, approaches, needs, and capabilities of the transportation disadvantaged population. Most of the transportation services for the transportation disadvantaged are funded by four different agencies. These include the Department of Transportation (DOT), Health and Human Services (HHS), the Department of Labor (DOL), and the Department of Education (DOE), (U.S. DOT, 2006).

Policy issues can be as important as the technology itself before an agency implements the Intelligent Transportation System (ITS). Another challenge is the rapid changes in technologies. It is a difficult task for the agencies to decide on the right time to implement new technologies, because each day a new technological feature is discovered. Other issues deal with the obstacle of meeting the wide range of needs within the transportation disadvantaged communities. The needs for a person with a cognitive disability or a person wheelchair bound greatly differ from a person with a sensory disability. Once these issues are addressed, the ITS technologies can be executed (U.S. DOT, 2006).

Computers, electronics, and communications systems for improving the surface transportation system are all aspects of the Intelligent Transportation System. Specific computer software programs for improvement include location software and equipment (automatic vehicle location [AVL] and geographic information systems [GIS], computer-aided dispatch (CAD), mobile data terminals (MDTs) or mobile data computers (MCDs), and integration and coordination software. One of the goals of the U.S. DOT (2006) and the transportation industry is to utilize ITS to move people more efficiently and with

greater safety, although it does not seem to include the improvements of amenities in this process.

ITS is divided into passenger-related technologies and organization-related technologies. The first passenger-related technology discussed is traveler information. Traveler information includes websites, automated telephone systems, audible enunciators, kiosks, and transit stops with automated information. The purpose of the traveler information technology is to provide the customer with information electronically. The content might include schedules, fares, routes, transfers, arrival times, and so on. The information may be provided on the transit vehicle itself, at the transit stop, through the internet, or over the phone. The second passenger-related technology listed is electronic fare payment. This technology allows the rider to pay for transportation services using a smart card or magnetic stripe card. This simplifies billing and payment. The third and final passenger-related technology is surveillance and security systems. These include video surveillance, silent alarms and covert microphones on vehicles, and smart cards for driver identification. These can be provided at transit stops and stations as well as in the transit vehicles (U.S. DOT, 2006).

There are four organization-related technologies as well. The first technology listed is automatic vehicle location. Using GIS and global positioning systems (GPS), the agency can track its buses. By combining AVL with Automatic Terminal Information Service (ATIS), the agency can then alert riders with real-time information. The combination of AVL with CAD, the agency can reroute transit vehicles to provide flexible service. The second organization-related technology is computer-aided dispatch

(CAD). This is used to assist agencies in dispatching paratransit vehicles. The third technology listed is mobile data terminals and mobile data computers. MDT/MDC is small on-board computers and interfaces that links the transit driver to an agency's computer network through wireless connection. The fourth and final organization-related technology is coordination and integration software. This helps agencies with scheduling, routing, billing, and reporting. With the integration of both the passenger-related and organization-related technologies, the advancement in helping the transportation disadvantaged population moved more efficiently and with greater safety. Although better amenities such as making sure each stop is ADA (Americans with Disabilities Act) approved with low-tech factors like wheelchair ramps and shelters are not included in this report, the combination of the afore mentioned high-tech advancements would greatly improve this idea significantly and should be implemented in future research.

It is apparent from the literature review that the research of relating bus stop amenities to ridership levels is a new idea. Transit authorities are always trying to bring more passengers aboard their systems. If more people use public transportation, the less traffic congestion and road maintenance is a hindrance. It can also produce additional funds for the authorities to utilize. This is especially true in an age where more people are trying to be economically frugal and some want to be environmentally conscious.

CHAPTER III

RESEARCH DESIGN, STUDY AREAS, DATA, AND METHODOLOGY

3.1 Research Design, Data, and Study Areas

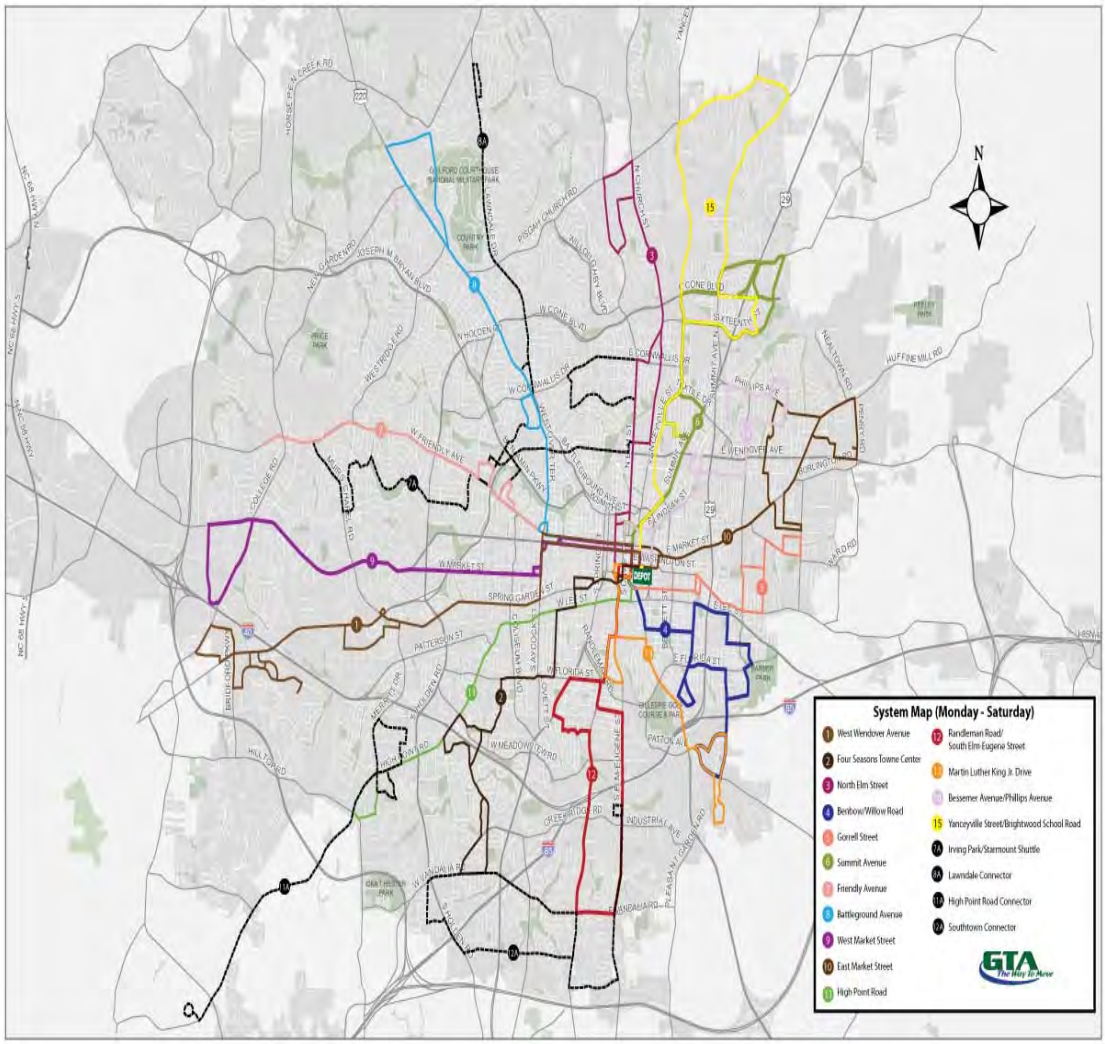
In researching literature, there were no mentions of a direct link between amenities and ridership. There were also few studies regarding transportation equity and locations of bus stops to meet the needs of all types of demographic groups. The empirical research on this matter is lacking; therefore, an extensive study on this idea through case studies needs to be carried out. For this purpose the following hypotheses are tested:

1) The location of bus stops and amenities are proportional to the areas of socio-economically disadvantaged group of people (e.g., areas with high proportion of minority, poverty, carless household, bus user commuters, and disabled people).
2) Bus stops with lower levels of amenities are placed in areas where socio-economically disadvantaged groups of people live, and bus stops with higher amenities are disproportionately found in the areas where socioeconomically advantaged groups are prevalent.
3) ADA approved bus stops (level 3 and 4) are facilitated in areas where these services are needed.

4) The lack or different level of amenities at each bus stop affects ridership levels in a significant way.

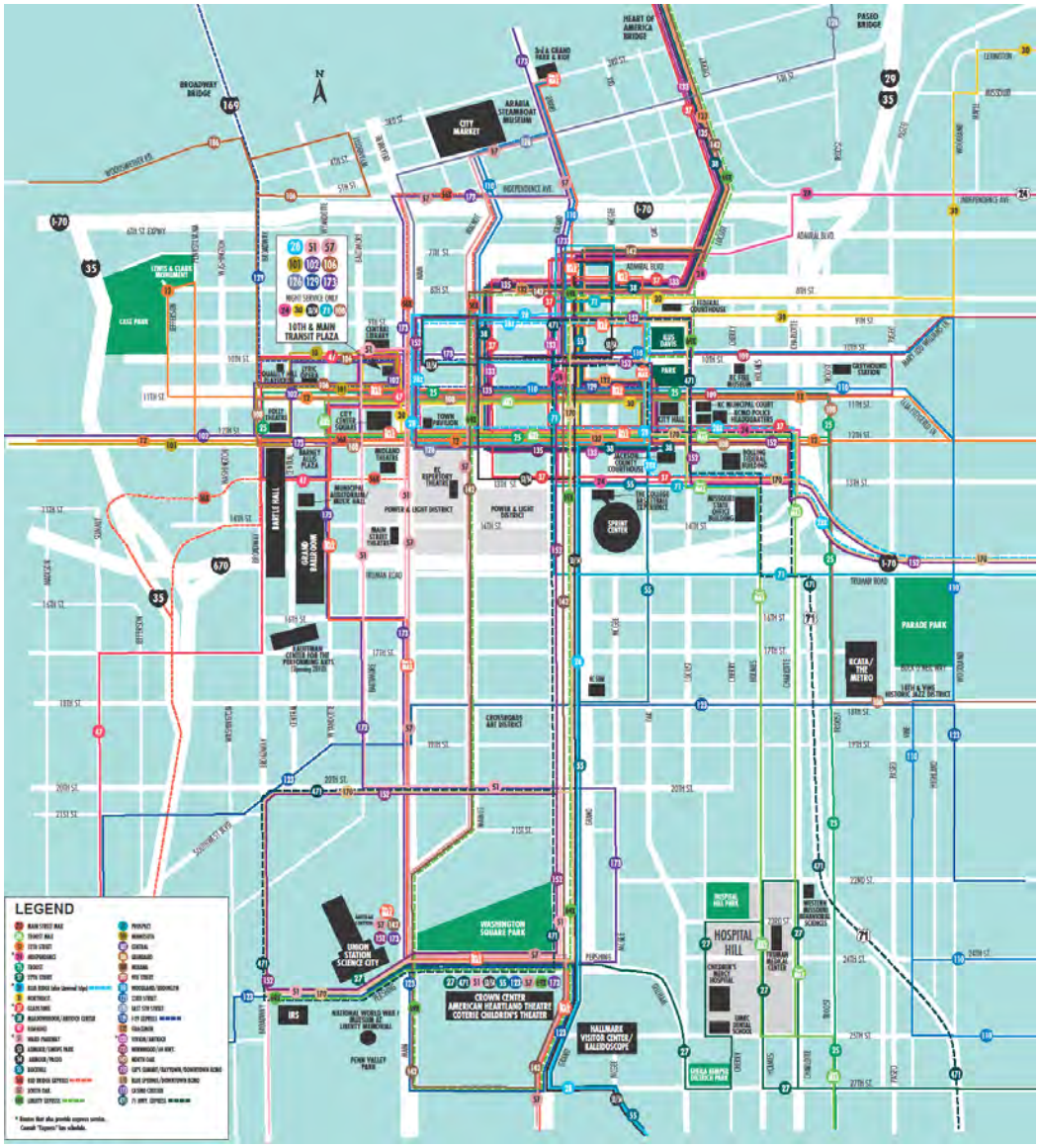
However, obtaining data for these investigations was not an easy task and explains why proposed research questions carried out in this thesis have not yet been investigated. Ridership data can sometimes be found through transit authority websites, although ridership levels at each stop is usually not available online. Initially these concepts were to be studied for the three larger cities of Charlotte, Raleigh and Greensboro in North Carolina (NC). The city authorities of Charlotte and Raleigh were contacted requesting data for this research. Although excited about this research topic, they failed to provide the ridership and amenity data. On the other hand, while the author was working with the City of Greensboro's Transportation Planning Division in 2009, I amenity and ridership data was able to be collected in person, although it was very time consuming. When obtaining the data from these cities in NC seemed unfeasible, different measures were taken. Emails and phone calls were sent to numerous, middle to large size metropolitan area transit authorities throughout the U.S. asking for available datasets for bus stop amenities and ridership at bus stop locations. Finally, a few responses were received. However, only three cities, Greensboro, NC, Kansas City, MO, and Seattle, WA, were able to provide datasets that were closest in format; therefore, they were chosen for investigation (Figure 3.1, 3.2 and 3.3). Even though the study areas are chosen based on the availability of data, these areas also represent a small, medium, and large metropolitan size for an excellent empirical analysis.

Figure 3.1: Greensboro Bus System



Source: Greensboro Transit Authority, 2010

Figure 3.2: Kansas City Bus System



Source: Kansas City Area Transportation Authority, 2011

Figure 3.3: Seattle Bus System

Source: King County Metro Transit, 2011

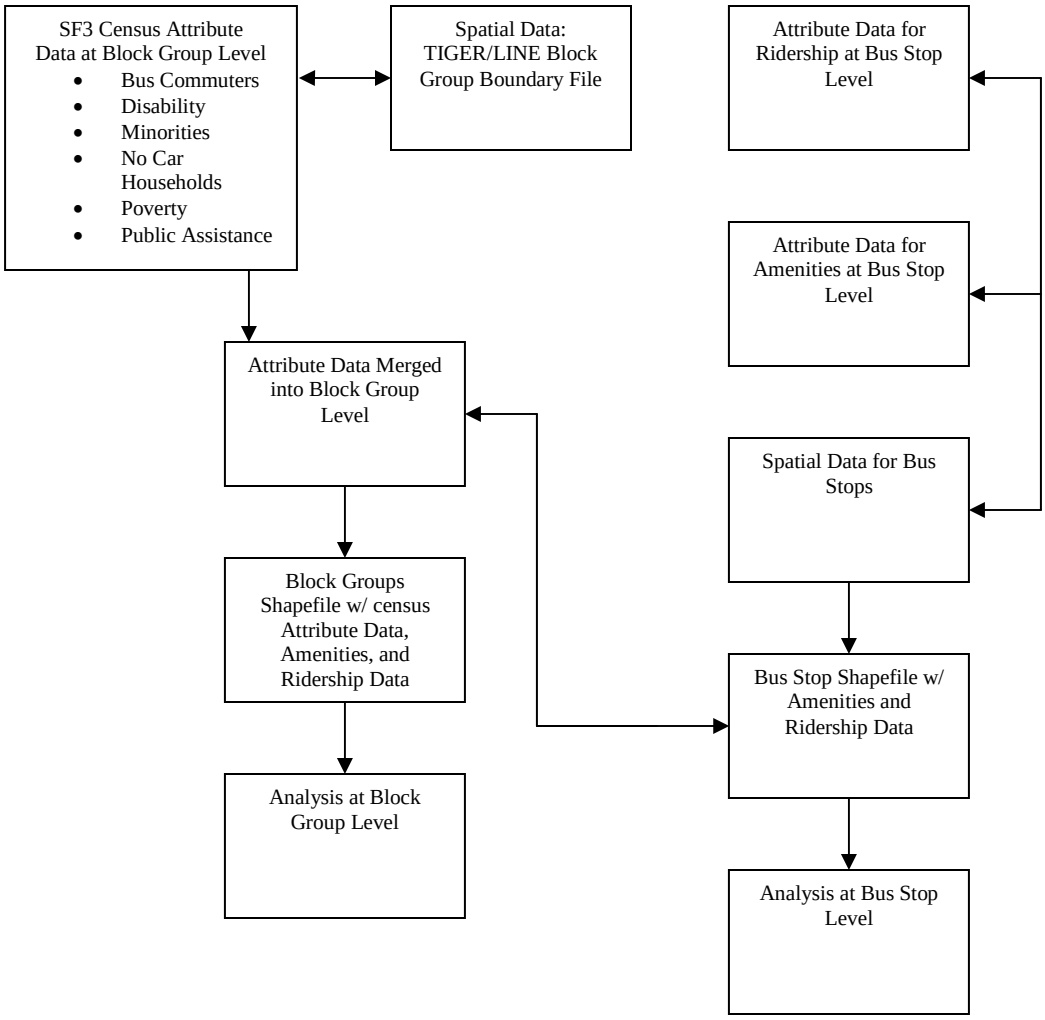
Greensboro's data was received via Greensboro Transit Authority (GTA). GTA serves the Greensboro metro area in Guilford County with 15 routes and five connector routes. GTA has partnership with seven local universities and colleges called Higher Education Area Transit (HEAT). There is also a system for riders who have a disability that prevents them from riding the fixed route service called Specialized Community Area Transportation (SCAT), (GDOT, 2011), (Figure 3.1.)

Kansas City's data was received via Kansas City Area Transportation Authority (KCATA). KCATA is a bi-state agency created by a compact between the States of Missouri and Kansas. This compact defines the KCATA district as the counties of Cass, Clay, Jackson, and Platte in Missouri, and Johnson, Leavenworth, and Wyandotte in Kansas. The KCATA operates the Metro bus service, the Metro Area Express (MAX) Bus Rapid Transit service, MetroFlex demand-response routes, and Share-A-Fare paratransit service for the elderly and persons with disabilities. KCATA runs a 61 bus route, 8 MetroFlex route, and 1 Bus Rapid Transit route system (KCATA, 2011), (Figure 3.2.)

Seattle data was obtained via King County Metro Transit (Metro). Metro is the public transit authority for King County, Washington, serving the greater Seattle metro area. It operates the transit bus system and Access Transportation for the elderly and persons with disabilities. KCMT operates a 223 route system. Also, Metro maintains a fleet of 159 electric trolley buses (ETBs) that serve 14 routes, (Figure 3.3.) These three transit authorities represent case studies for a small metro area (Greensboro), a medium

sized area (Kansas City), and a larger sized area (Seattle). The range in scale will serve for a better analysis in this research.

Figure 3.4: Methodology Design



Sources: US Census Bureau, 2000; GTA, 2009; KCATA, 2009; KCMT, 2009

3.2 Methodology

Since amenity data and ridership data are not combined and analyzed by the transit authorities, the data that was retrieved from each agency was not uniform and had to be re-categorized and processed into a new database. The ridership data for each transit authority was in a one year period. Greensboro had only recently implemented their automatic passenger count which was ridership levels for one year. Kansas City ridership data was for a one year period as well. Seattle sent data for two different years, but only one was used due to the one year periods of the other cities. Ridership data is represented by ONs (on boards), OFFs (off boards), and TOTAL for each bus stop. One problem in the data given was due to the fact that ridership data and amenity data were cataloged in separate databases. In order to properly match these two variables at each location, a linking system was undertaken through Microsoft Excel. The amenities for each bus stop location's address had to be linked one by one to the location address of each bus stop ridership cell. This had to be done for each city and it was tedious.

All three transit authorities collected and reported their amenities in different ways. Seattle listed more amenities where as Kansas City listed the least. Amenities can range from a sign, bench, trash can, shelter, lighting, to Americans with Disability Act functions. The amenity listed as Americans with Disability Act (ADA) represents if the location is equipped with wheelchair ramps, raised bumps in the sidewalk (for visually impaired people), and so on. Greensboro's amenities that were listed are the following: sign, bench, trash can, lighting, shelter, ADA. Kansas City amenities listed were benches, trash cans, and shelters. Seattle amenities listed were sign, sidewalk, bench,

shelter, awning, landing, bollards, news box, bike rack, and ADA. The amenity and ridership data were linked together and tabulated in an Excel spreadsheet by each bus stop location.

Since ridership data at bus stop locations did not come with demographic characteristics of riders, for further analysis of transportation equity issue, selected socio-economic variables were extracted. There were many demographics to choose from to study this topic. Because a high level of mobility is essential to the lifestyles and economic well-being of all people, and historically, minorities and the financially deprived have not enjoyed as high a level of mobility as others (Batelle, 2000), only certain socio-economic variables were chosen for this research. The socio-economic variables were chosen as: vehicles with no car, people who ride the bus, people with disabilities, total minorities, population below poverty, and population receiving public assistance (Census 2000 Summary File 3 (SF3) at the block group level, Dbase IV file). The variables chosen were used as percentages of the total population. Also Census 2000 TIGER/Line Data block groups shape files for each county of the three study areas were downloaded. The census Dbase IV files were then joined with the TIGER block groups files in ArcMap 9.3 to create a shapefile which presents block group socio-economic data. The bus stop locations files were collected in GIS shapefile format and amenities in Microsoft Excel format. These two files were linked in a database then merged into a new shapefile that contains the location of bus stops and their associated amenities and ridership. Then this shapefile, which includes the amenity level, is joined with the Census block group census demographic shapefile through a spatial join. The spatial join

summed the amount of bus stops and amenities that are located in each block group. This process was done for Greensboro, Kansas City, and Seattle. Before further discussion of bus stop amenities and their spatial analysis, the idea of amenity levels should be explained. After reviewing the literature about the functionality of amenities, the author's knowledge and judgment were used to create an amenity level structure to designate each bus stop. The amenity levels are broken down into 4 categories. They are designated amenity level 4, being the highest, to level 3, 2, and 1 (lowest). Each amenity level also has a different color assigned to it. The criteria for different amenities are listed in the following table to provide a better understanding. Based on the literature review, other variables such as crime rate, accident rates, and pollution at bus stops may affect ridership, but to the author's knowledge there are no such records at bus stop level, and it is impossible to include those variables in this analysis. This also makes it impossible to determine which came first; amenities or ridership. There is a cause and effect relationship that needs to be studied in the future by these transit agencies to determine the relationship if amenities create ridership or vice versa.

Table 1: Amenity Level Criteria

AMENITY LEVELS		
LEVEL 4	SHELTER, ADA, BENCH, AND ANY OTHERS FROM LEVELS 1, 2, OR 3	
LEVEL 3	BENCH, ADA, AND ANY OTHERS FROM LEVELS 1 OR 2	
LEVEL 2	SIGN, LIGHT, TRASHCAN	
LEVEL 1	SIGN ONLY	

CHAPTER IV

FINDINGS

One could assume that the more amenities at a bus stop, the more riders. Is this a fact or just an assumption? The research undertaken in this paper will attempt to clarify this question. Also, are amenities being distributed fairly to all communities and demographic groups? Are they being distributed to those who need and use public transit the most? These questions will be answered through a series of spatial and quantitative approaches.

4.1 The Spatial Distribution of Bus Stops and Amenities: Do they serve everyone fairly?

All demographics are at the block group level. The block groups on the maps are broken into 4 classifications. The darkest blue represents block groups with the highest percentage of each selected demographic. The selected demographics chosen are bus users, households with no car, disabled, minorities, those in poverty, and those who use public assistance. These demographic groups are represented as percentages of the total population on the maps. The reason for choosing these demographics is because these are the populations who tend to use public transit the most and also fall into the transportation equity equation. The following figures in this section show different maps for each case study. Each figure contains two maps. One map will represent the total

number of bus stops in each block group as graduated circles which are embedded in each block group. There are four classifications of circles, the largest having the most bus stops in that block group. They were classified by natural breaks. These maps representing total bus stops will serve to show spatially if more bus stops are located in areas to where there is the most use and of need transit. The second maps in each section show each individual bus stop designated with a different amenity level (noted by different colors.) Each figure will contain the same demographic, but one showing bus stops and the other showing amenity levels. The purpose of these maps is to determine if these demographics are being fairly served by the transportation authorities. Also each socio-economic variable represented in each map will be followed by a bar graph showing categorical analysis created through PASW 18 in relation to the specific variable and the amount of bus stops and amenities that fall in those block groups.

Table 2: Number of Bus Stops and Amenity Level Percentages

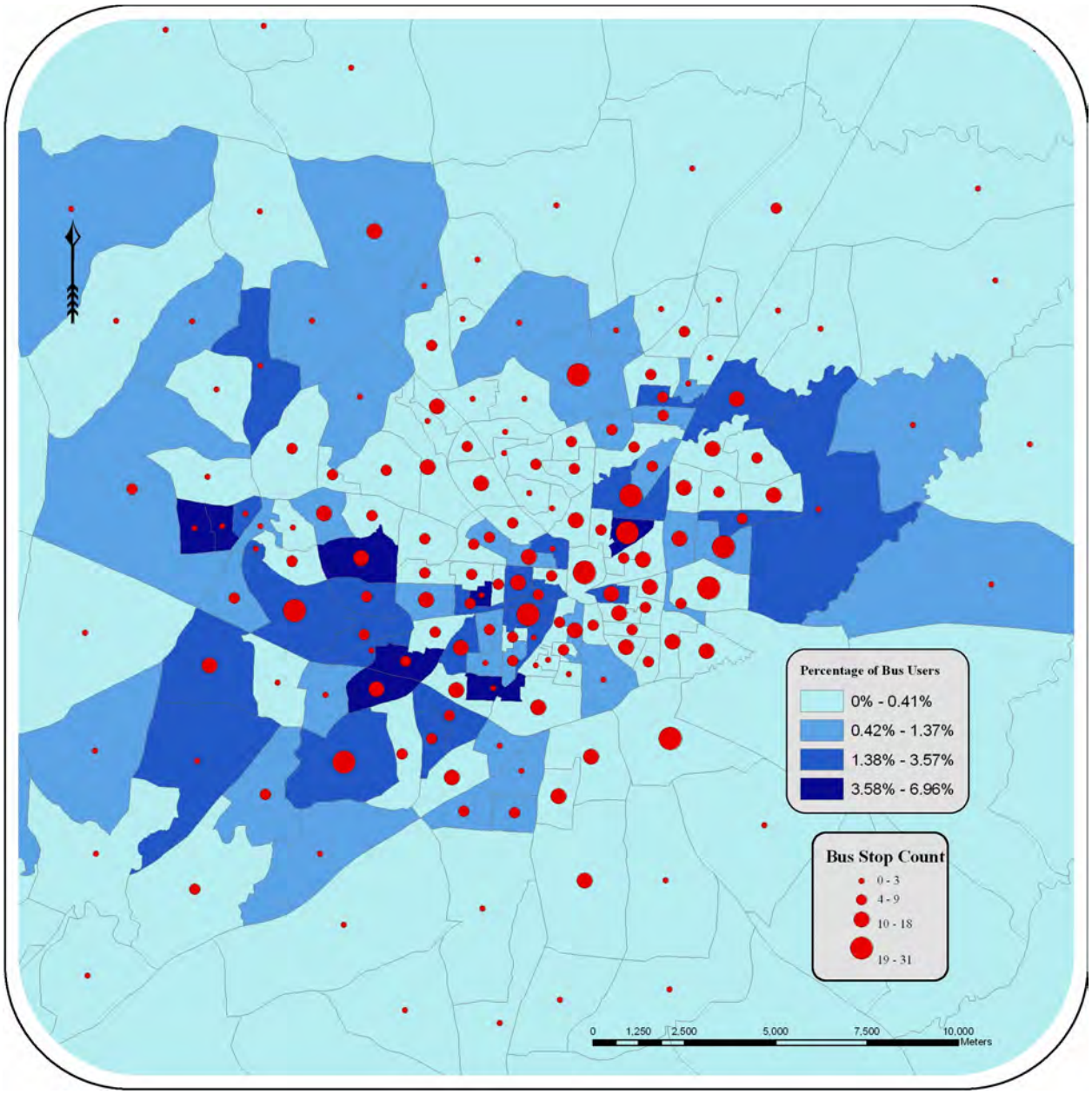
	GREENSBORO		KANSAS CITY		SEATTLE	
AMENITY LEVEL	NUMBER OF BUS STOPS AT EACH LEVEL	PERCENTAGE OF TOTAL BUS STOPS	NUMBER OF BUS STOPS AT EACH LEVEL	PERCENTAGE OF TOTAL BUS STOPS	NUMBER OF BUS STOPS AT EACH LEVEL	PERCENTAGE OF TOTAL BUS STOPS
LEVEL 4	13	1.2%	0	0%	1661	18.3%
LEVEL 3	10	.92%	158	3.4%	3145	34.8%
LEVEL 2	801	74.2%	668	14.5%	257	2.8%
LEVEL 1	255	23.6%	3764	82.0%	3971	43.9%
TOTAL	1079	100%	4590	100%	9043	100%

Sources: GTA, 2009; KCATA, 2009; KCMT, 2009

4.2 Greensboro, NC

Before analyzing the maps in this section, Table 2 shows the amount of bus stops of each amenity level and the percentage of total bus stops for Greensboro, Kansas City, and Seattle. One can already see that there are very few bus stops at levels 4 and 3. There is an overwhelming amount of bus stops at levels 2 and 1. The bus stops with high amenity levels will now be analyzed where they are located on the maps to ascertain if they are in areas where they are needed or used the most.

Figure 4.2.1: Bus Stop Counts and Percentage of Bus Users: Greensboro, NC

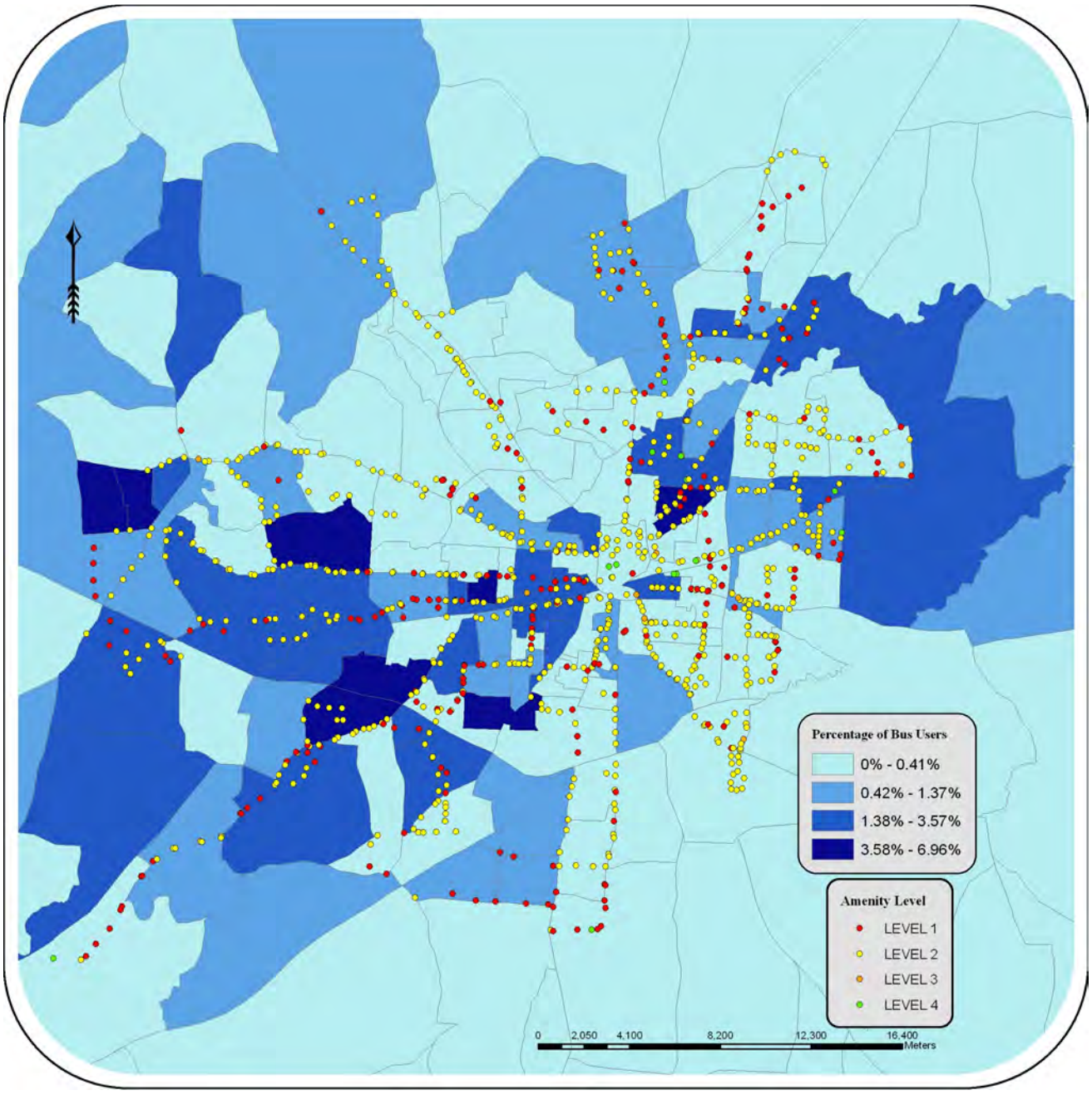


Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.1 is a map showing bus stop counts and the percentage of commuters who use bus by block groups in Greensboro. The numbers in the bus stop count legend represents the total number of bus stops located in each block group. The first map which represents total bus stops by graduated circles has nine representing the highest amount of bus stops. None of these are located in block groups with the highest percentages of commuters use bus. Three of the highest bus stop counts are located in block groups with the least amount of bus user commuters. It seems as if overall concentrations of bus stops are not spatially located in areas where they are needed by people who actually use the bus system.

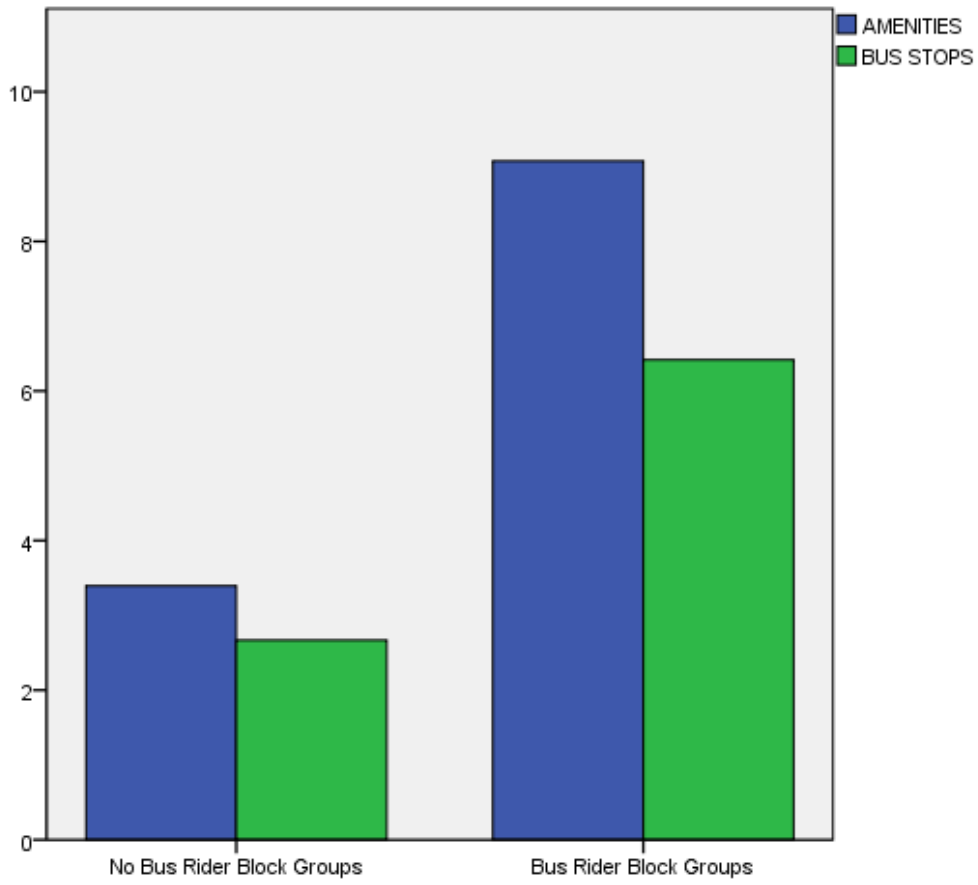
Figure 4.2.2 shows bus stop amenity levels and commuters who use bus by block groups. Of the block groups with the highest percentage of bus user commuters, there are no bus stops with amenity levels 4 or 3. Most of the bus stops in these areas are level 2 with three at level 1. There are only two bus stops with level 4 located in areas with the second highest amount of bus user commuters and only a few stops with level 3. The rest of the stops with level 4 are located in areas of the second fewest and fewest percentages commuters who use bus. Although, people who ride the bus more for their commuting and have to endure more wait and exchange times should be rewarded with more amenities for their safety and comfort, the spatial distributions of bus stop amenity level suggest an unfortunate trend. However, one can see this trend as a strategy by transit authorities to place more amenities in places with lower bus rider commuters to improve ridership

Figure 4.2.2: Amenity Levels and Percentage of Bus Users: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

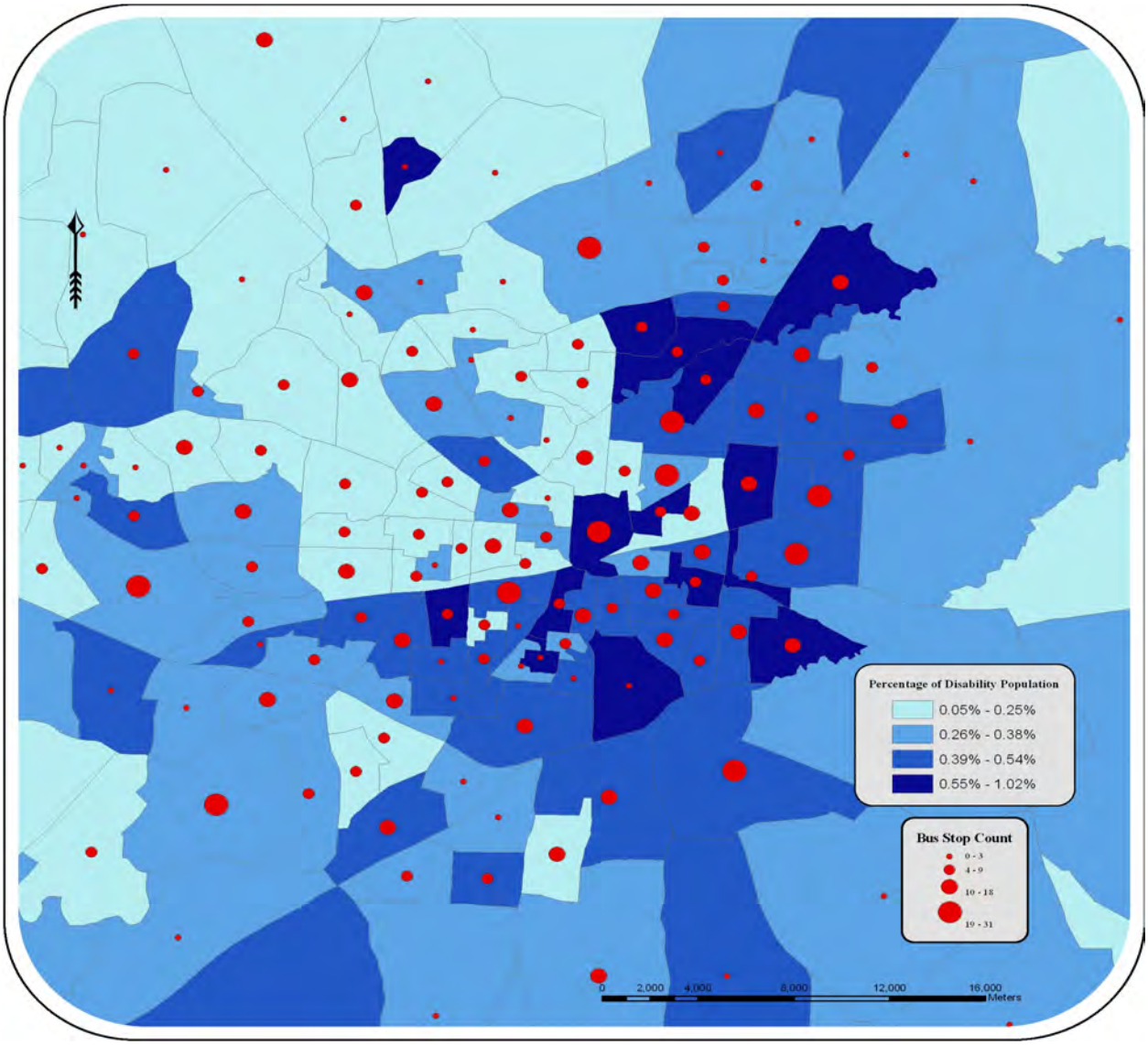
Figure 4.2.3: *Bus Users Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.3 is a bar graph showing bus stop counts and total amenities found in block groups with no bus use commuters and block groups with bus user commuters. Although by examining Figure 4.2.2, it seems there are not enough high amenity levels in areas of more bus rider commuters, Figure 4.2.3 shows that there are more total amenities and bus stops in block groups with bus rider commuters versus those without bus rider commuters.

Figure 4.2.4: Bus Stop Counts and Percentage of Disability Population: Greensboro, NC



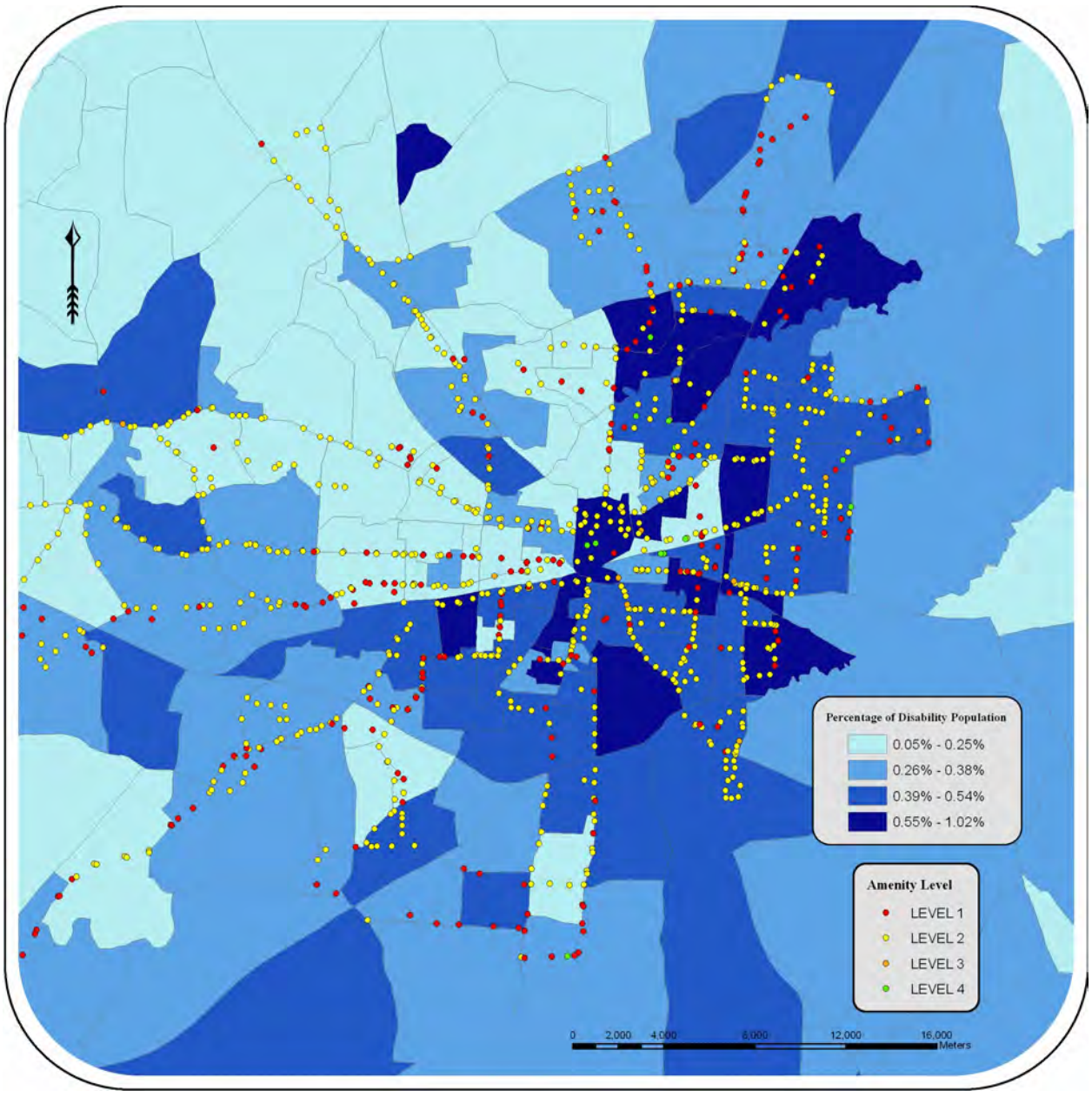
Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.4 shows the bus stop counts and the percentage of disabled population by block groups in Greensboro. Figure 4.2.4 shows only one circle with the highest amount of bus stops falling inside a block group with the highest concentration of

disabled population. There are, however, five of the nine circles with the highest bus stops located in the areas of the second highest concentration of disabled population. Overall, from viewing the map, there seems to be a fairly even dispersal of bus stops in areas with the disabled population, and there are no circles of the highest level amenities located in areas with the lowest population of the disabled. However, there is a definite need for more bus stops in the block groups with the highest concentration of disabled people.

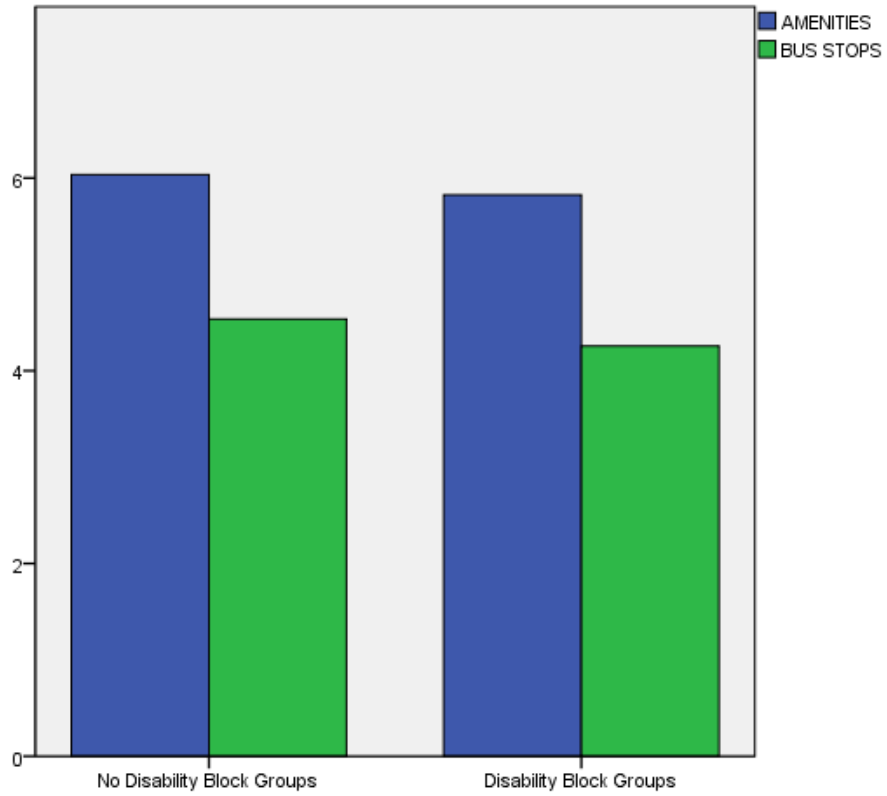
Figure 4.2.5 represents amenity levels and the percentage of disability population by block groups for Greensboro. The disability population should receive the same amount of amenities, if not better, than that of the population with no disabilities. As shown in Table 2, there are only 13 out of 1079 bus stops in Greensboro that are categorized as level 4. Of those thirteen level 4 bus stops, three fall inside block groups with the highest populations of the disabled. Seven of the thirteen level 4 bus stops fall inside areas with the second highest disabled population. The remaining three level 4 bus stops are located in areas of the lowest disabled populations. Although it is fortunate that the majority of the level 4 bus stops are located in areas of high disability populations, the problem is that there are very few bus stops with level 4 and level 3 designations in Greensboro as a whole. Of the ten level 3 bus stops, only two are located in block groups with the highest disabled populations.

Figure 4.2.5: Amenity Levels and Percentage of Disability Population: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

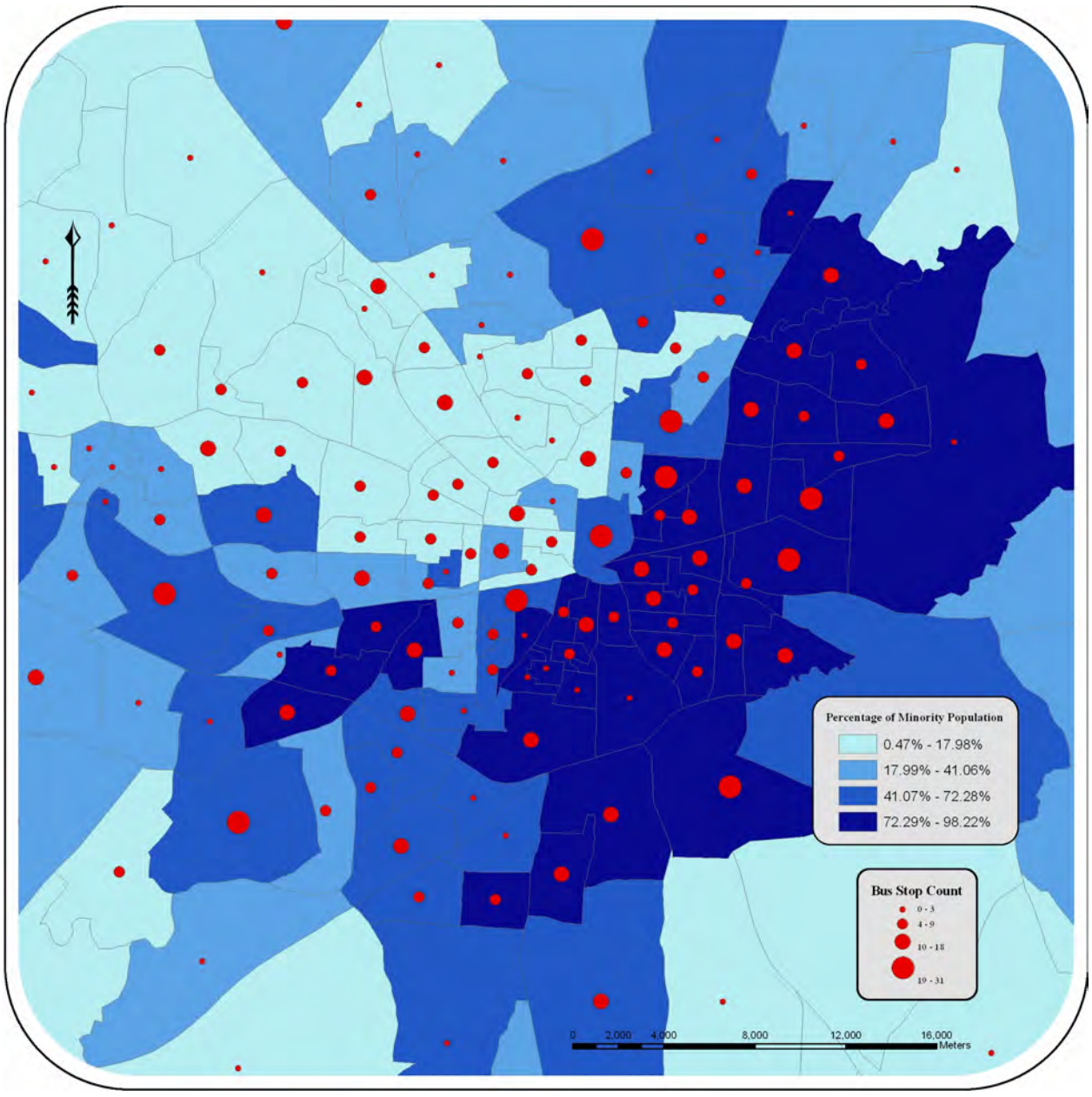
Figure 4.2.6: *Disability Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.6 is a bar graph showing bus stop counts and total amenities found in block groups with no disabilities and block groups with disabilities. Although the maps show a somewhat fair distribution of bus stops and amenity levels, one can see in Figure 4.2.6 that there are slightly more bus stops and total amenities located in block groups with no disabilities.

Figure 4.2.7: Bus Stop Counts and Percentage of Minority Population: Greensboro, NC

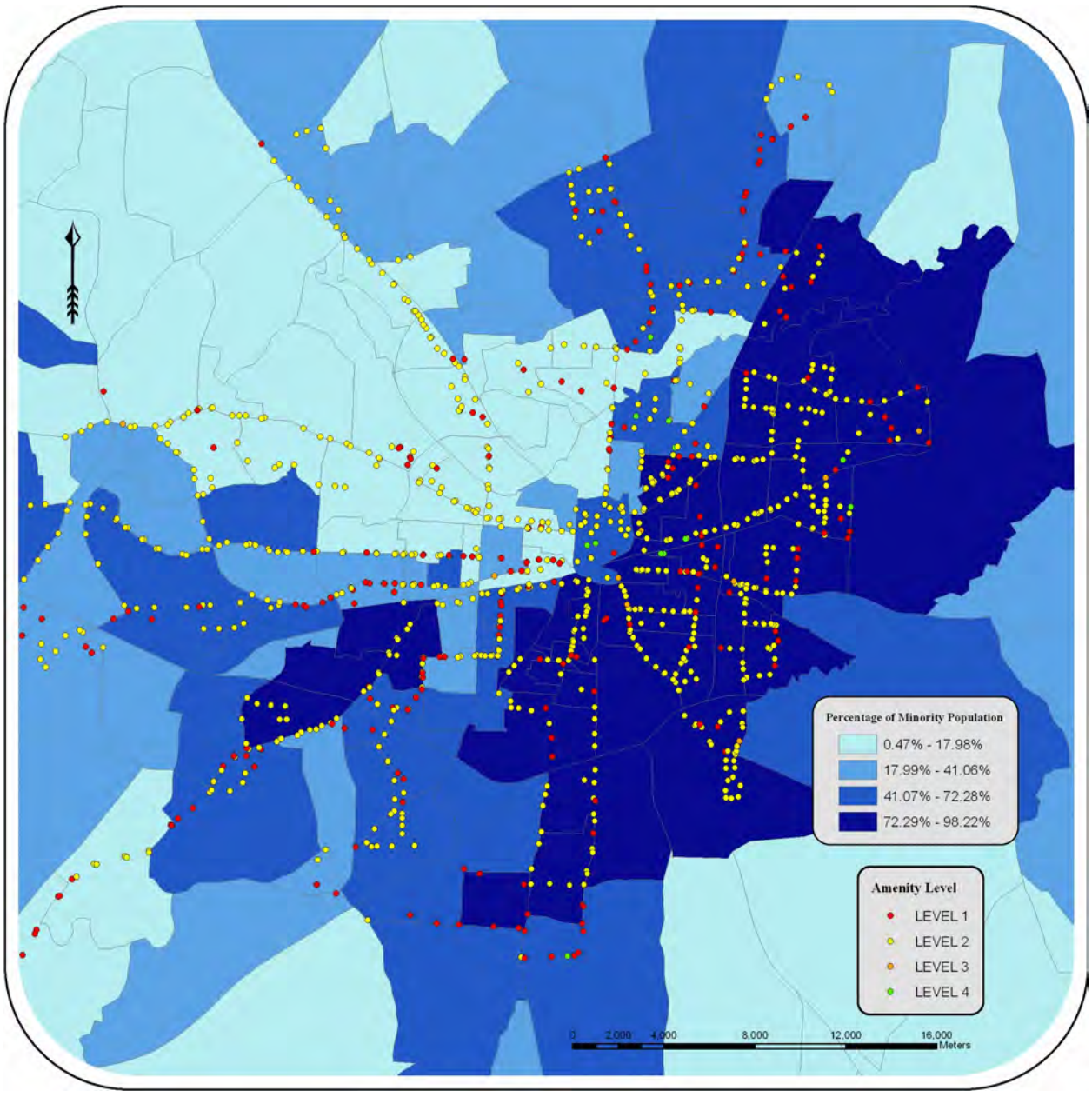


Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.7 is a map showing the bus stop counts and the percentage of minority population by block group in Greensboro. Figure 4.2.7 has four block groups of the highest minority percentage containing the highest amount of bus stops. There are six block groups with the second highest minority population containing the highest amount of bus stops. As far as the location of bus stops in Greensboro, there seems to be a moderately even dispersal throughout the city. There are actually more bus stops located in areas of higher minority population. This trend is quite compatible with the idea of transportation equity.

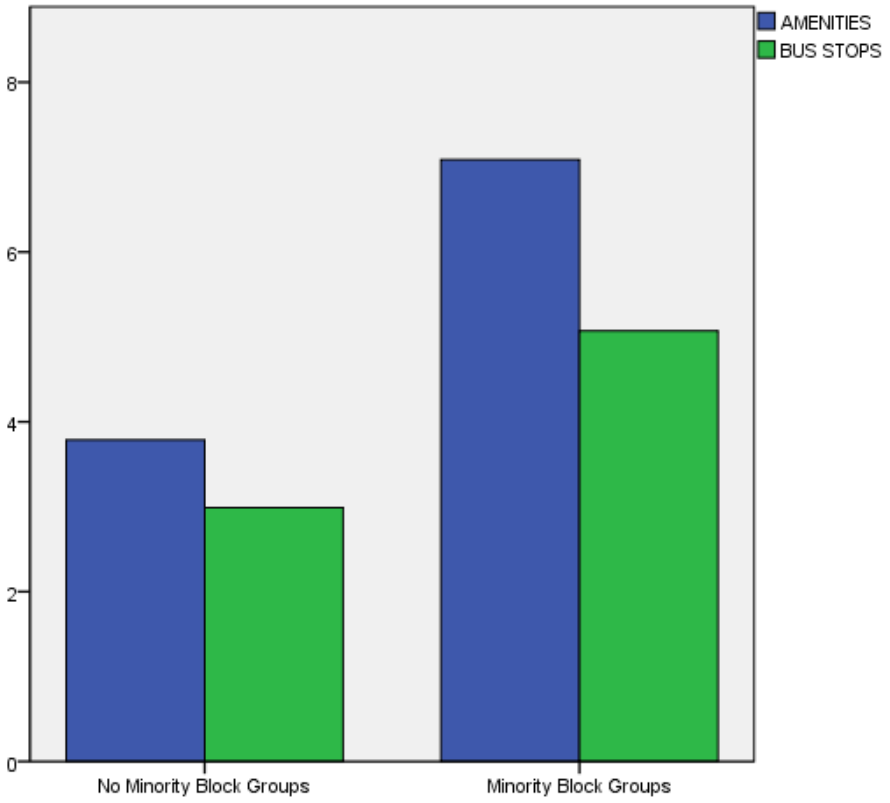
Figure 4.2.8 shows amenity levels and the percentage of minority population by block groups in Greensboro. Of the thirteen level 4 bus stops, five are located in block groups of the highest minority populations. Seven of the level 4 bus stops are located in block groups of the second highest minority population. Only one level 4 bus stop is located in a block group with the lowest minority population. Eight out of the ten level 3 bus stops are inside block groups of the highest minority population. The remaining two level 3 bus stops are in areas of the second highest minority population. The overall dispersal of amenities in Greensboro is definitely located in areas of higher minority populations which again is compatible to transportation equity, although the same problem remains: there are too few bus stops with high amenity levels throughout the city.

Figure 4.2.8: Amenity Levels and Percentage of Minority Population: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

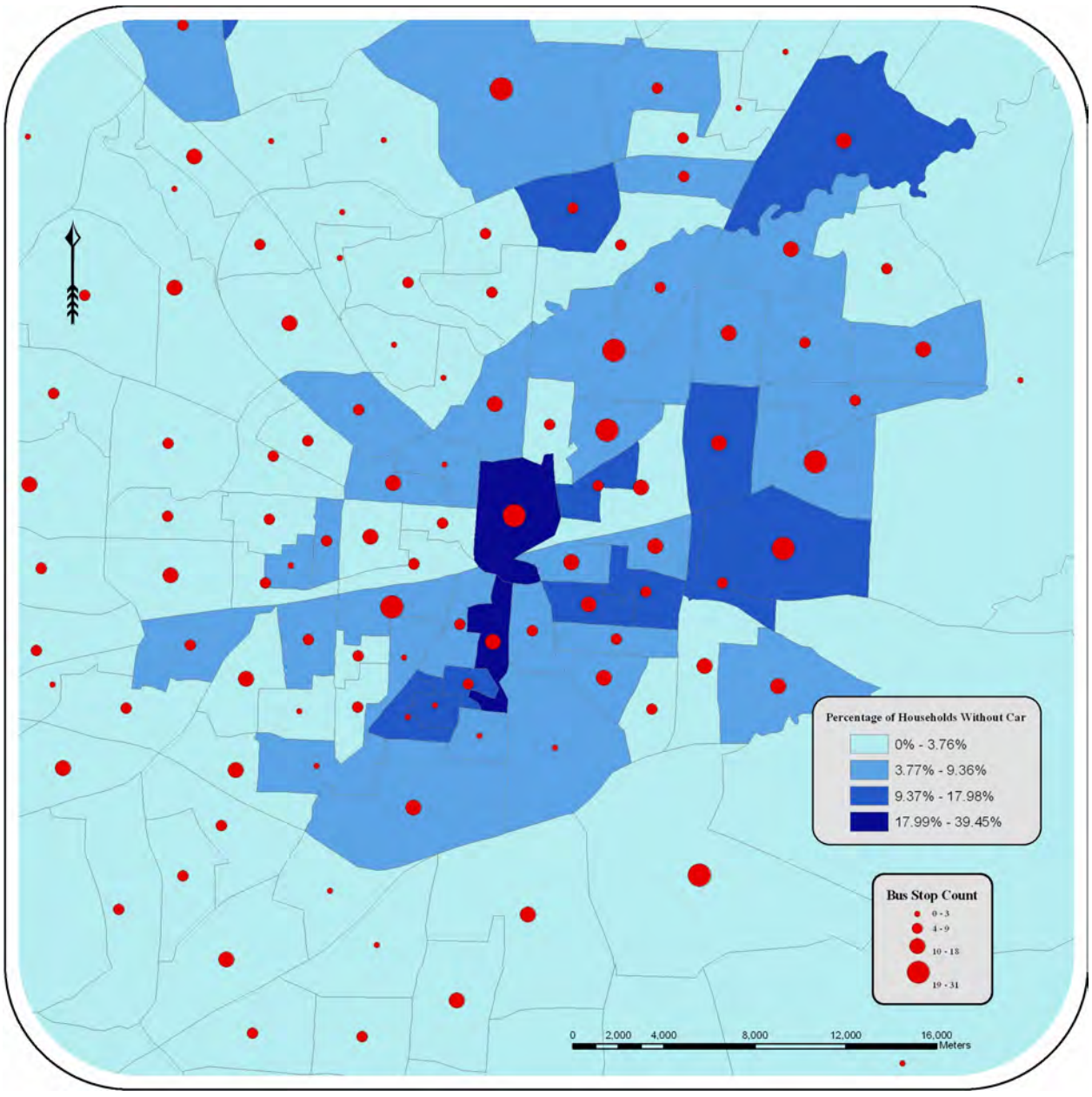
Figure 4.2.9: *Minority Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.9 is a bar graph showing bus stop counts and total amenities found in block groups with no minorities and block groups with minorities. The results in Figure 4.2.9 are the same as those in the maps. There are definitely more bus stops and total amenities in areas of more minority populations.

Figure 4.2.10: Bus Stop Counts and Percentage of Households without Car: Greensboro, NC

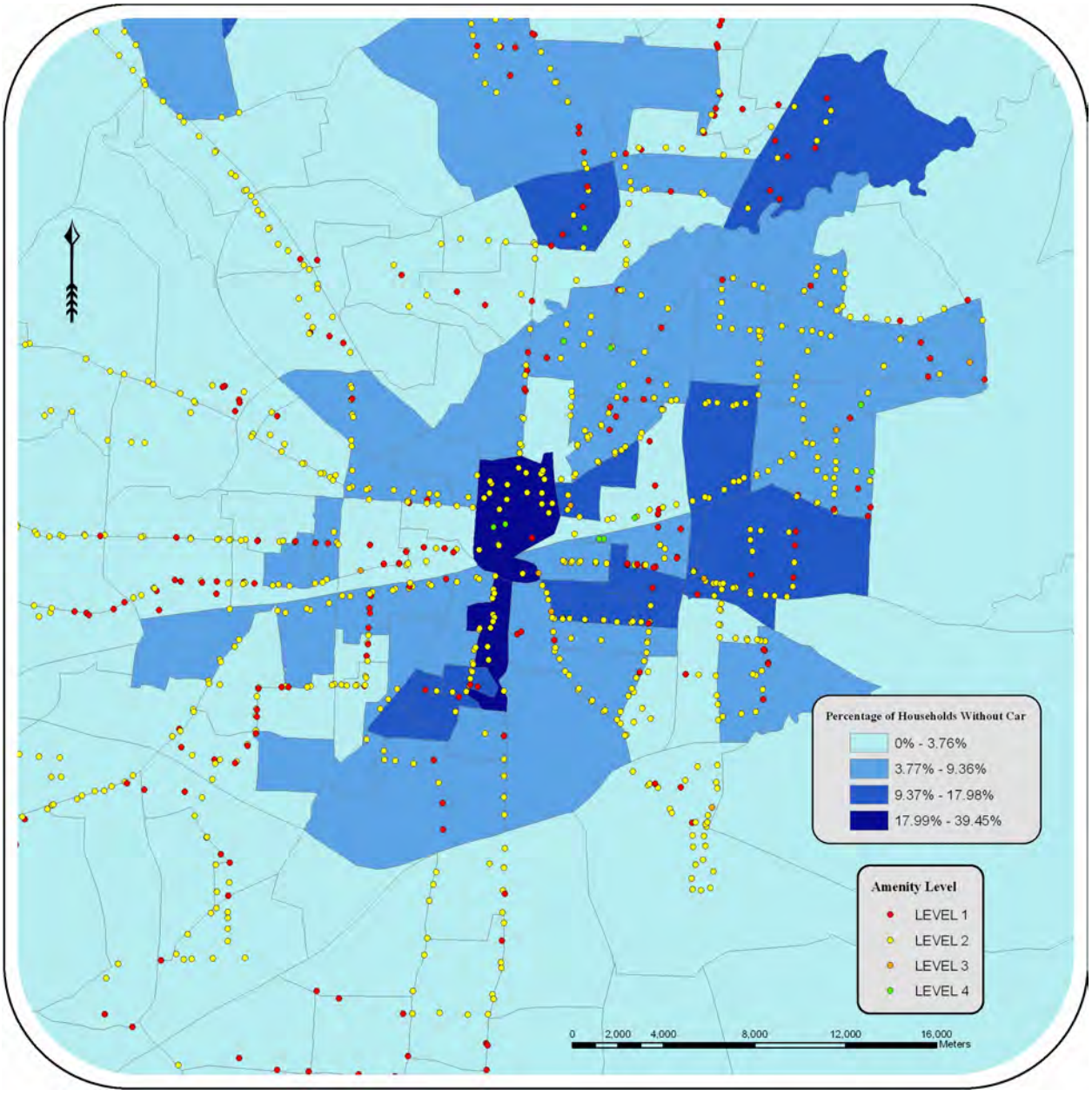


Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.10 is a map representing the percentage of households with no car by block group in Greensboro. Figure 4.2.10 shows two block groups with the highest population with no car. In those two block groups, there is one with a circle representing the highest number of bus stops and the other with the second highest. The first block group is the block group of downtown, which most downtowns do contain higher populations without cars because they tend to work and live in a close proximity. The rest of the block groups with the second and third highest no car households are fairly evenly dispersed with bus stops throughout.

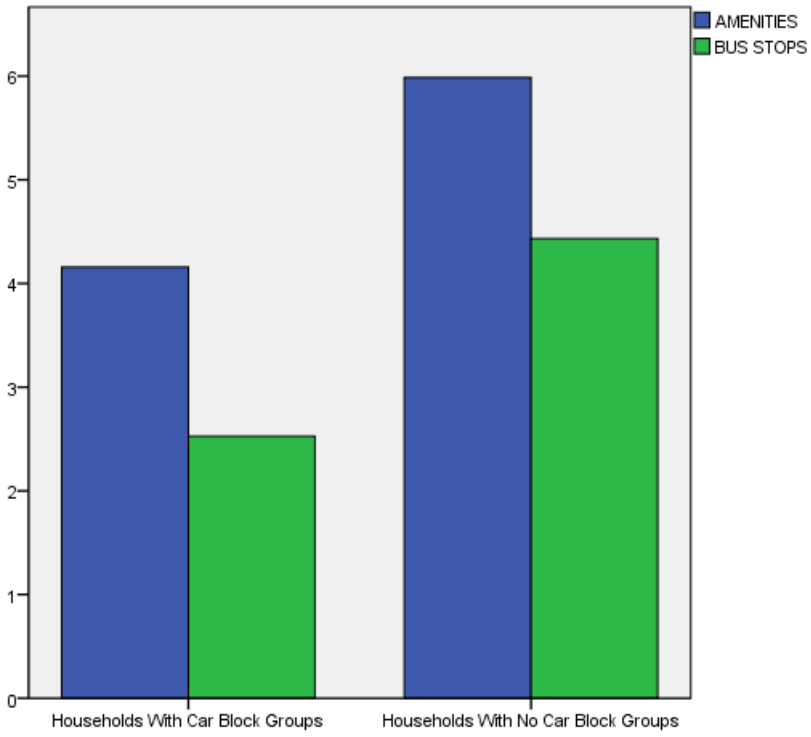
Figure 4.2.11 represents amenity levels and the percentage of households with no car. Of the two block groups with the highest population of no car households, there are two level 4 bus stops. The rest of the bus stops in these areas are level 2 with one level 1. There is only one level 4 and one level 3 bus stop in areas of the second highest population of no car households. The rest of the higher level bus stops fall inside areas of lower no car household populations. This is an adverse trend given the assumption that those without cars are more likely to need bus stops and deserve better amenities at those stops.

Figure 4.2.11: Amenity Levels and Percentage of Percentage of Households without Car: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

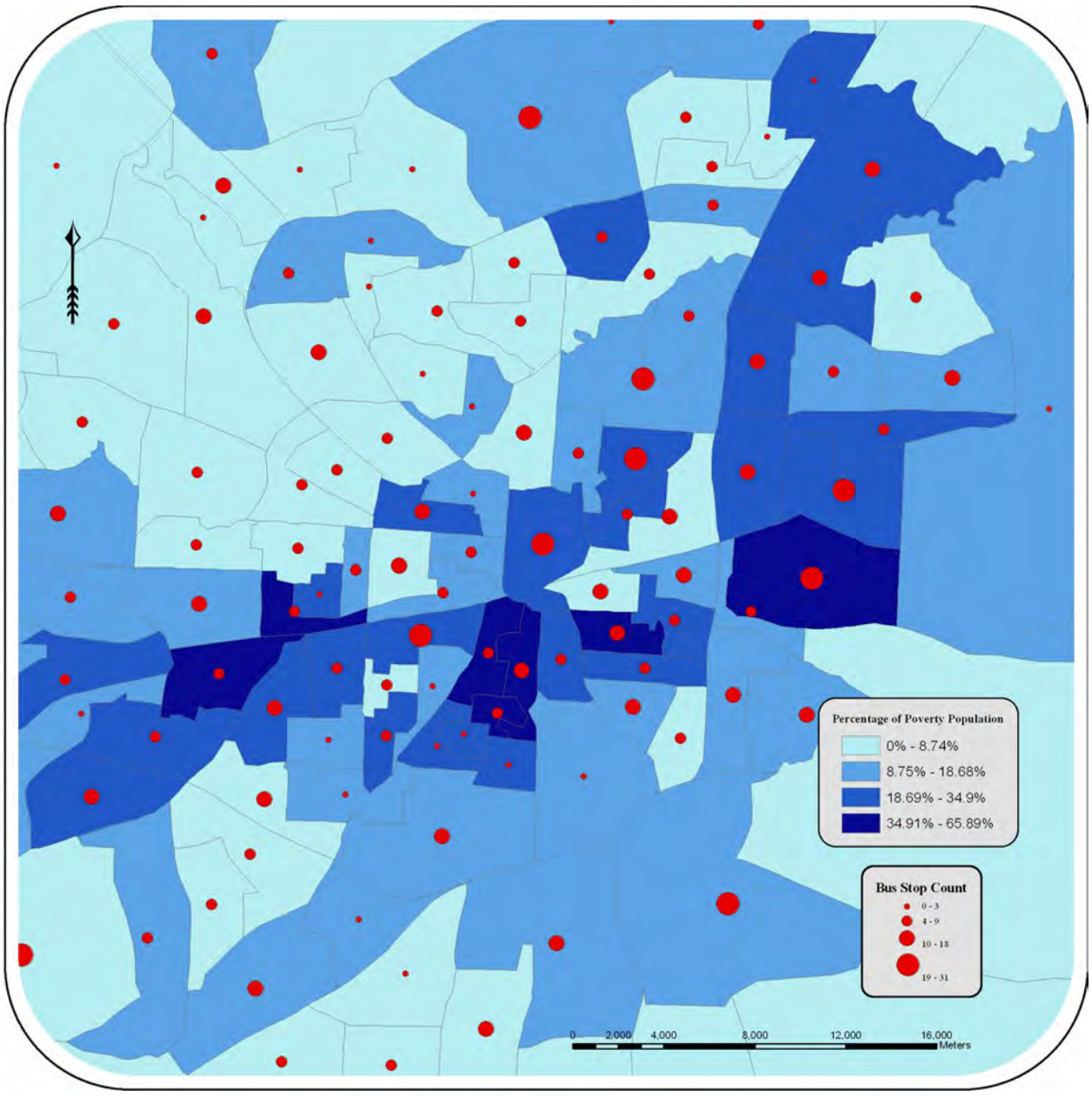
Figure 4.2.12: *No car Household Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.12 is a bar graph showing bus stop counts and total amenities found in block groups with households with cars and block groups with households with no car. Although the maps show higher amenity levels in areas with cars, Figure 4.2.12 shows that there are more total amenities and bus stops in areas of households with no car.

Figure 4.2.13: Bus Stop Counts and Percentage of Poverty Population: Greensboro, NC

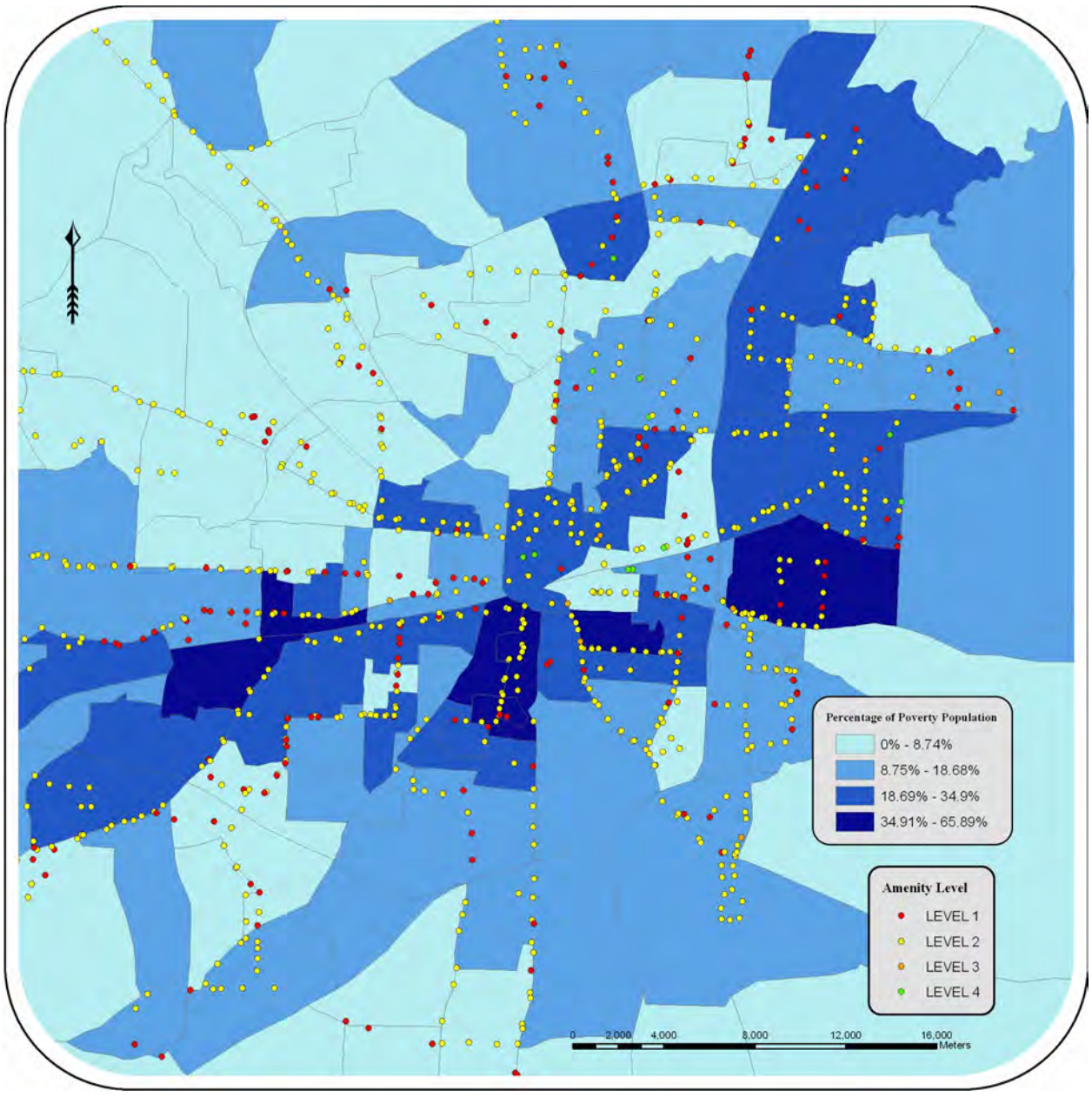


Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.13 represents the percentage of poverty population by block groups. Figure 4.2.13 shows only one circle representing the highest amount of bus stops located in a block group with the highest percentage of poverty stricken, however, the rest of the block groups in these areas have the second to third highest amounts of bus stops. The areas of the second highest poverty populations have numerous block groups with high concentrations of bus stops. There are very few low concentrations of bus stops in areas of higher poverty populations. Most of the block groups with a low amount of bus stops are in areas with low poverty populations. This dispersal seems somewhat fair given the assumption that those in poverty will more likely have to use public transportation.

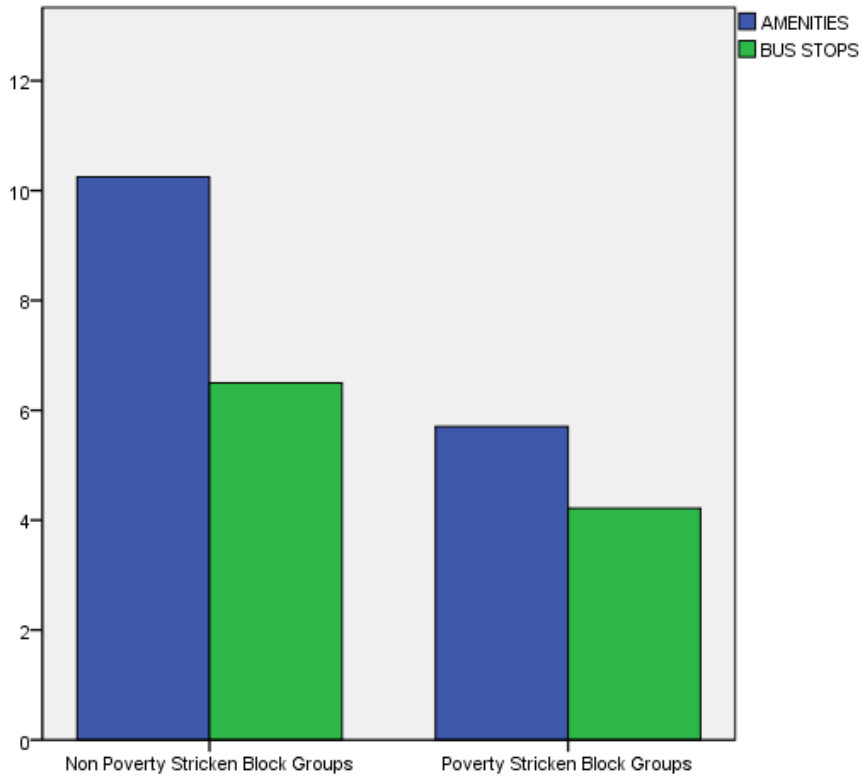
Figure 4.2.14 represents amenity levels and the percentage of poverty population by block group. Of the level 4 bus stops, there is not one located in areas of the highest concentration of those in poverty. And of the level 3 bus stops, there are only two located in these same areas. There are numerous level 1 and level 2 bus stops where the poverty population is high. There are, however, five level 4 bus stops and two level 3 bus stops in areas of the second highest poverty populations. The rest of the higher level bus stops are in areas of lower poverty populations. Although there are sufficient amounts of total bus stops in these areas, there is a lack of those with higher amenity levels. This is contradictory to the concept of transportation equity.

Figure 4.2.14: Amenity Levels and Percentage of Poverty Population: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

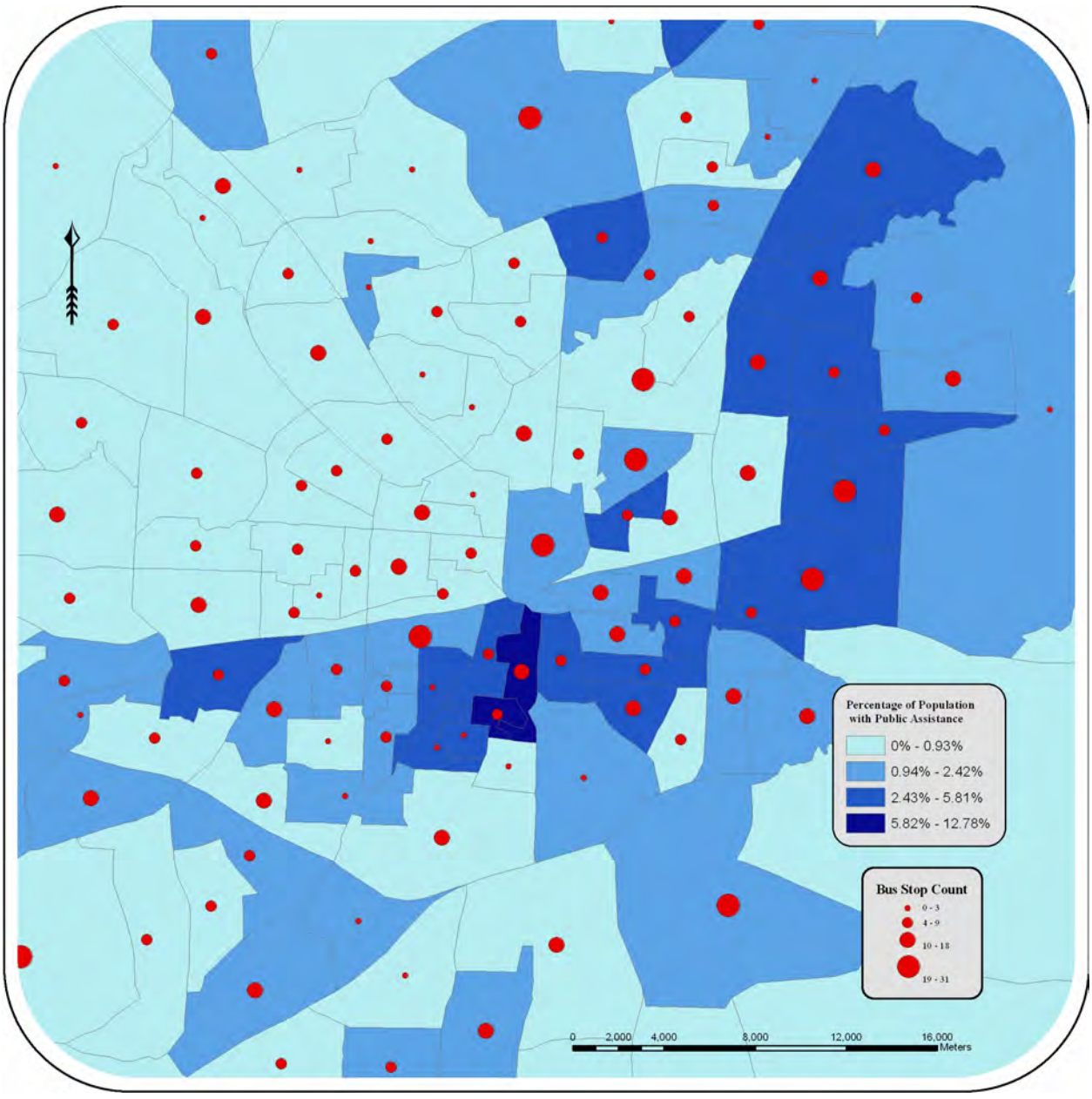
Figure 4.2.15: *Poverty Stricken Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.15 is a bar graph showing bus stop counts and total amenities found in block groups with no poverty and block groups in poverty. This figure shows a clear uneven distribution to those in poverty versus not in poverty. There are far more bus stops located in block groups with no poverty, as well as more amenities in areas of no poverty.

Figure 4.2.16: Bus Stop Counts and Percentage of Population with Public Assistance: Greensboro, NC

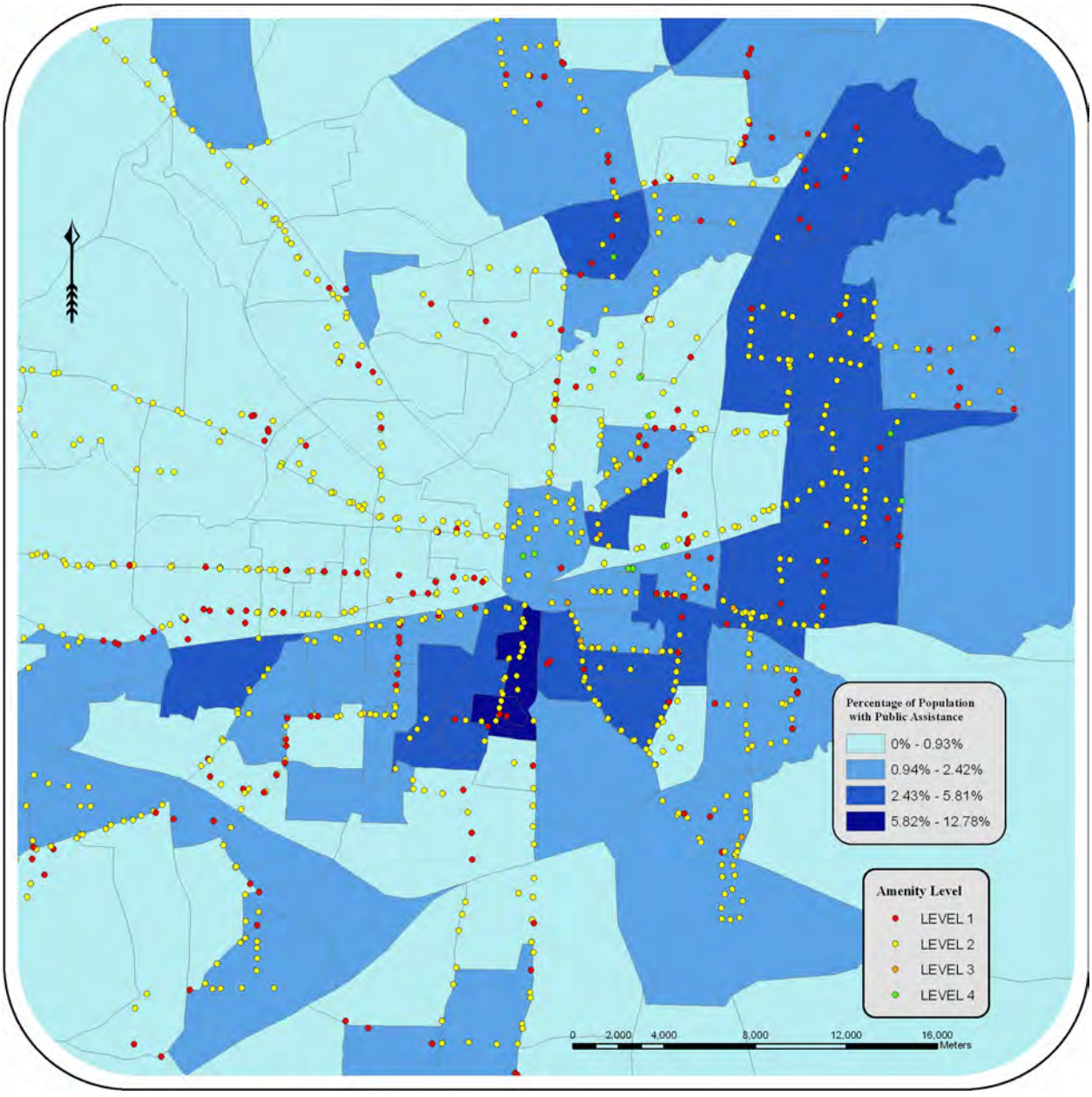


Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.16 is a map representing the percentage of population receiving public assistance by block group. This map does not have a concentration of the highest amount of bus stops in block groups with the highest populations receiving public assistance, although they are not the lowest amounts of bus stops either. There is a fair amount of higher concentrations of bus stops in areas of the second highest public assistance populations. There are definitely more bus stops concentrated in areas of where the population receives public assistance versus those where they do not. Mentioned in the poverty section above, this is a good trend given the assumption that people living with public assistance, like those in poverty, might rely more on public transportation than those without public assistance.

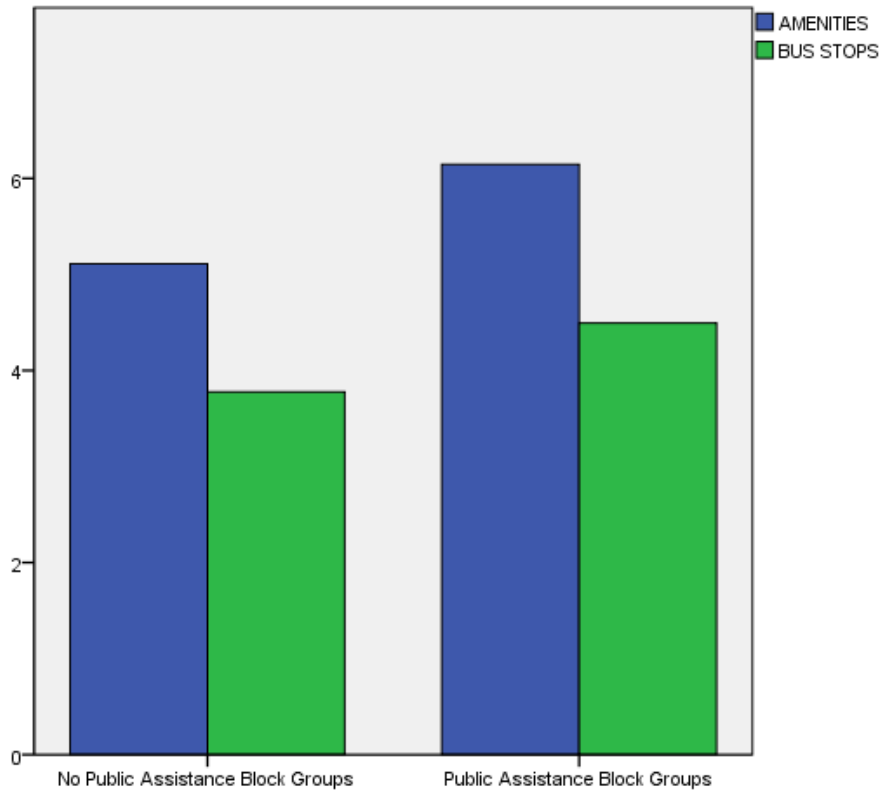
Figure 4.2.17 shows amenity levels and the percentage of population receiving public assistance by block groups. In the block groups with the highest public assistance population, there are no level 4 bus stops and only one level 3. In the areas with the second highest populations of public assistance aid, there are three level 4 bus stops and three level 3 bus stops. There is a significant amount of level 1 and level 2 bus stops in these areas. There are ten level 4 bus stops in areas of the lower to lowest populations of those receiving public assistance. This is also unfortunate, as in the case for the poverty population. Again, there are plenty of bus stops in these areas, but with lower amenities.

Figure 4.2.17: Amenity Levels and Percentage of Population with Public Assistance: Greensboro, NC



Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.18: *Public Assistance Block Groups in Relation to Bus Stop and Amenity Locations*



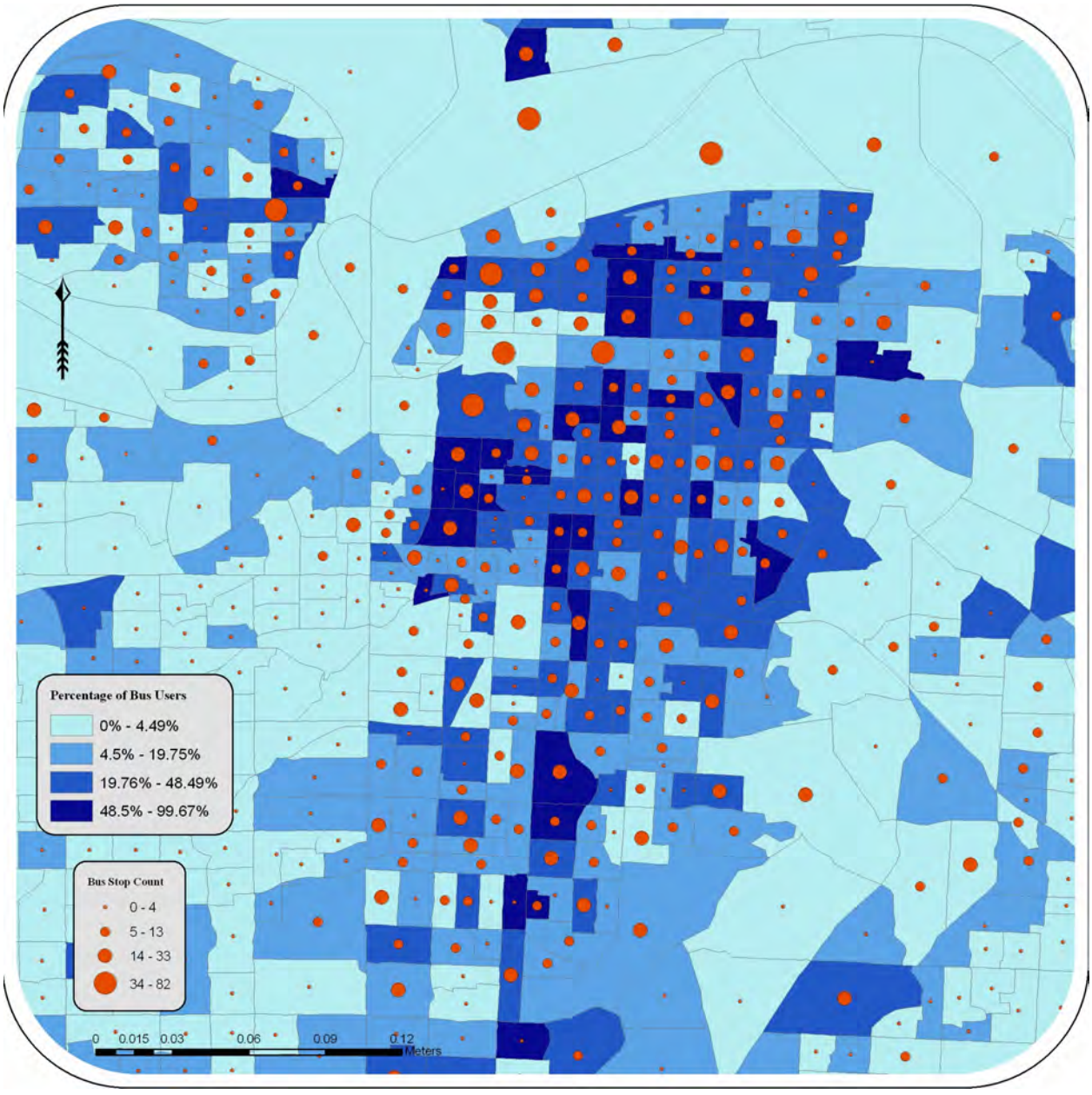
Sources: US Census Bureau, 2000; GTA, 2009

Figure 4.2.18 is a bar graph showing bus stop counts and total amenities found in block groups with no public assistance and block groups with public assistance. Although the maps show higher amenity levels in areas with less public assistance, Figure 4.2.18 shows more bus stops and total amenities in areas where people receive public assistance.

4.3 Kansas City, MO

Before analyzing the maps in this section, the Table 2 in the prior section is represented to show the number of bus stops of each amenity level for Kansas City, MO. After creating the amenity level system it was realized that no bus stops in Kansas City are at level 4 and only 158 out of 4590 bus stops have amenities at level 3. There are an overwhelming number of bus stops at level 2 and 1. The number of bus stops and those with higher amenity levels, with none of the highest level, will now be analyzed as to where they are located spatially on the maps and if they are in areas where they are needed or used the most.

Figure 4.3.1: Bus Stop Counts and Percentage of Commuters by Bus: Kansas City MO

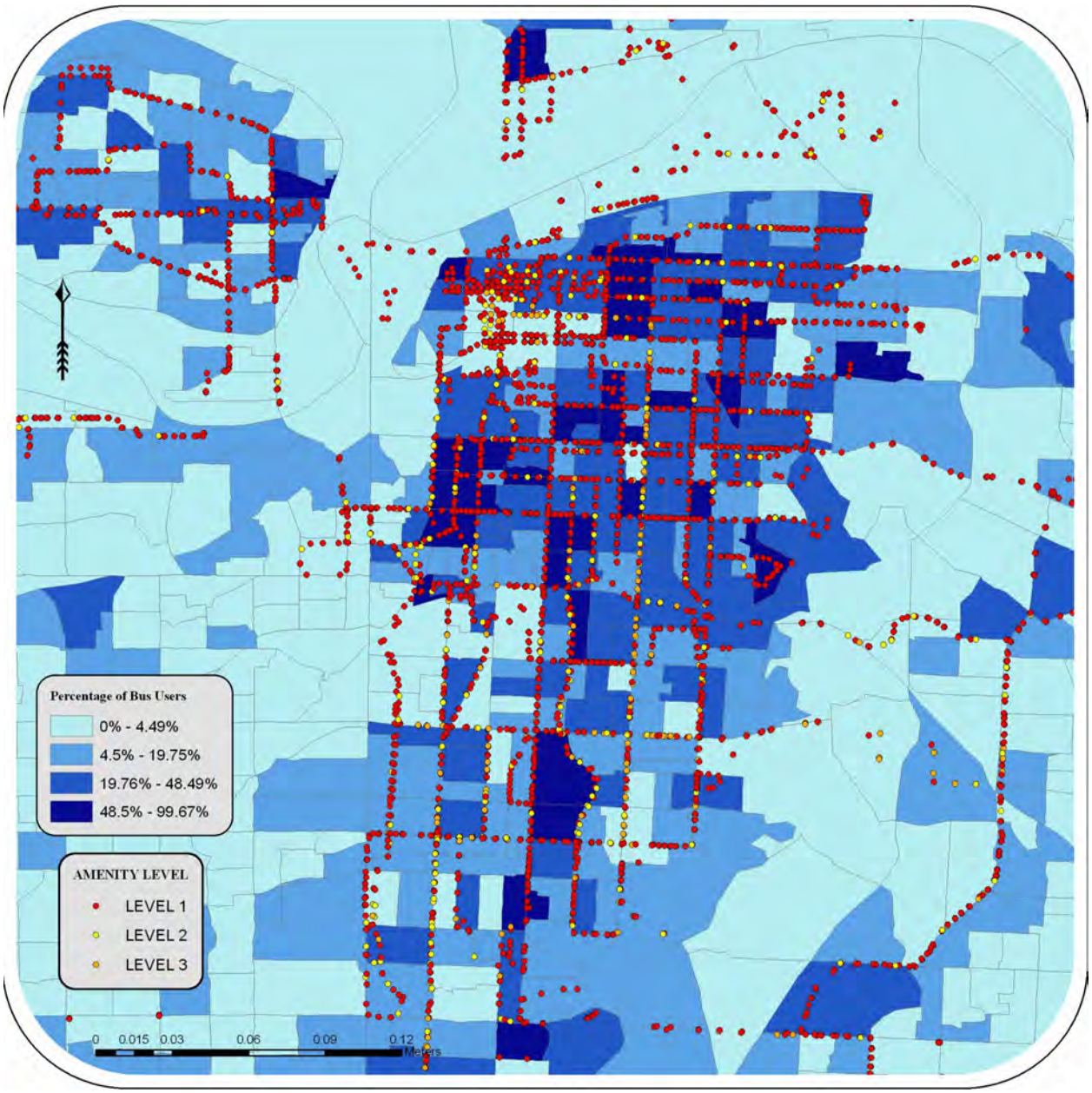


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.1 represents the percentage of bus users by block group for Kansas City. We can see that there are no block groups with the highest population of public assistance containing the highest amount of bus stops. Of the areas with the second highest population of bus riders, there are two block groups containing the largest number of bus stops. There does seem to be an overall fair distribution throughout. In the areas of higher bus user populations, there are numerous block groups with medium to high bus stop counts the majority of low stop counts fall in block groups of low bus user populations.

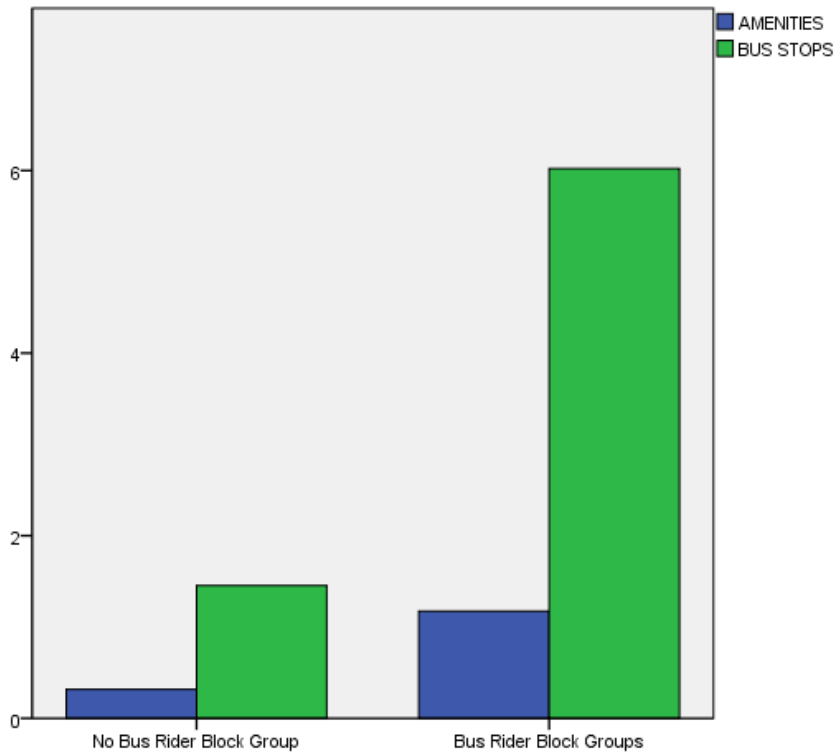
Figure 4.3.2 shows amenity levels and the percentage of bus user population by block group. The block group with the largest population of bus riders has bus stops only at amenity level 1. The areas with the second highest populations of bus riders contain numerous level 3 bus stops. The majority of the level 3 bus stops actually fall inside higher populations of bus riders, except of course the block group with the most bus riders. Although the level 3 bus stops are mostly located where more bus riders live, the overall concern for Kansas City is the overall lack of high amenity bus stops.

Figure 4.3.2: Amenity Levels and Percentage of Bus Users: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

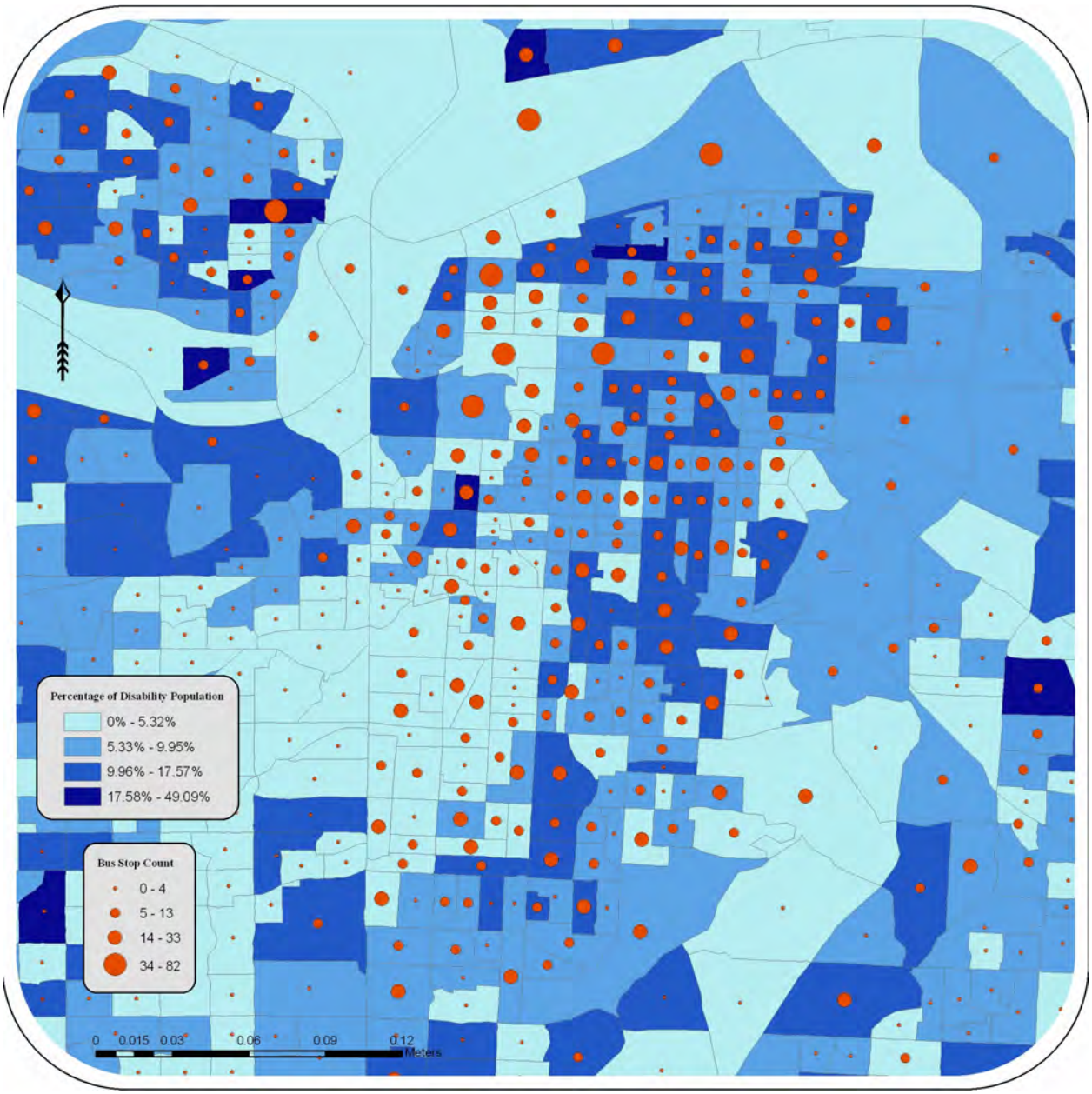
Figure 4.3.3: *Bus User Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.3 is a bar graph showing bus stop counts and total amenities found in block groups with no bus riders and block groups with bus riders. Although the maps show more bus stops in areas with lower bus rider populations, Figure 4.3.3 shows that there are significantly more bus stops in block groups with bus riders versus those with no bus riders, as well as more total amenities in these areas. Note that this graph represents block groups with absolutely no bus riders versus those with any number of bus riders where the maps show four different classifications of bus rider populations which could explain the contrasting results.

Figure 4.3.4: Bus Stop Counts and Percentage of Disability Population: Kansas City MO

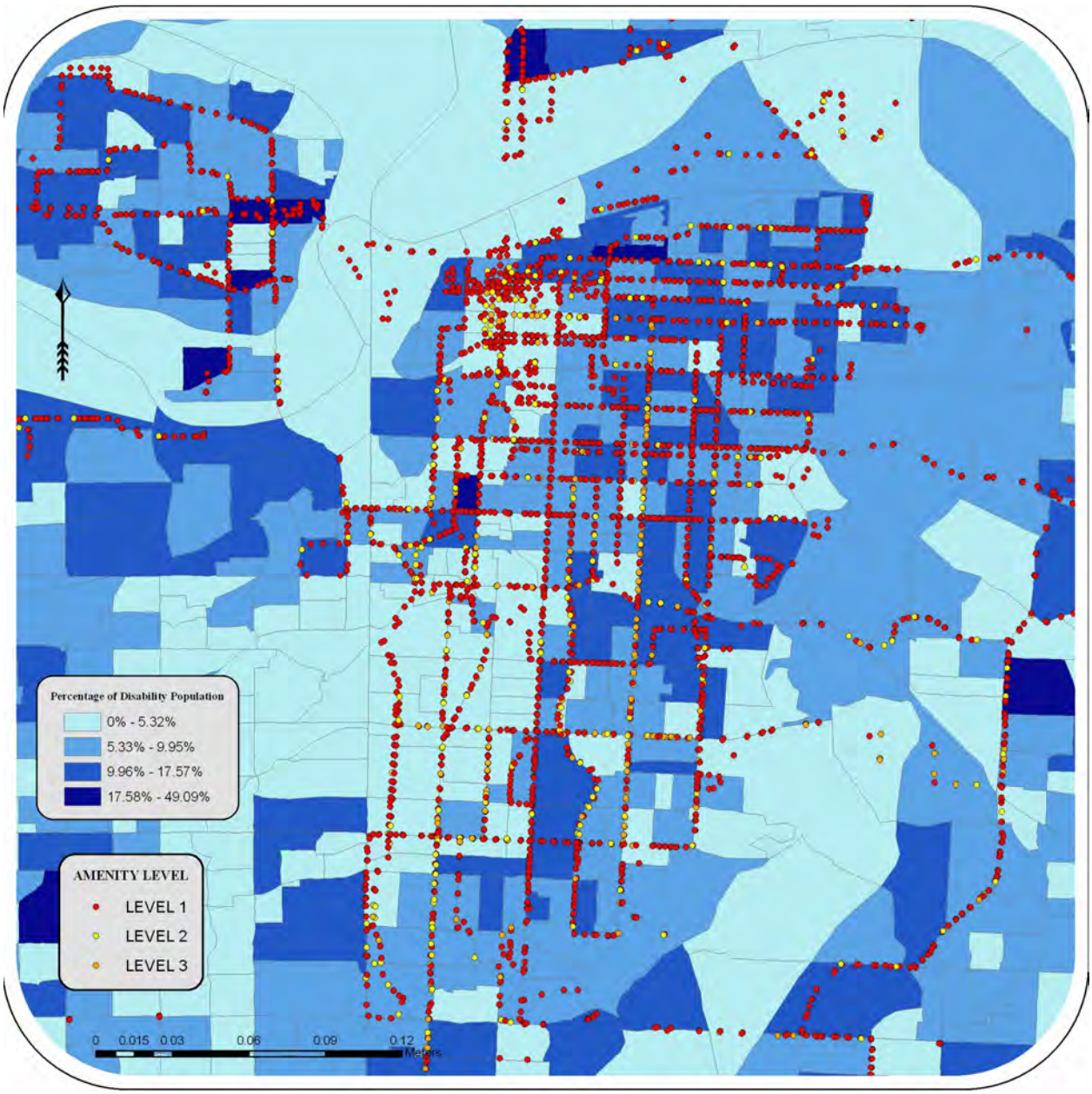


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.4 represents bus stop counts and the percentage of disability population by block group. The map shows seven block groups containing the highest number of bus stops. Of those seven block groups, two are located in areas of the highest population of the disabled and two in areas of the second highest population. Over half of the other block groups of the highest disabled population contain concentrations of higher bus stops. Most of the block groups with the fewest bus stops fall inside areas of lower to lowest disability population. There seems to be an even distribution of bus stops to the disabled and non-disabled peoples.

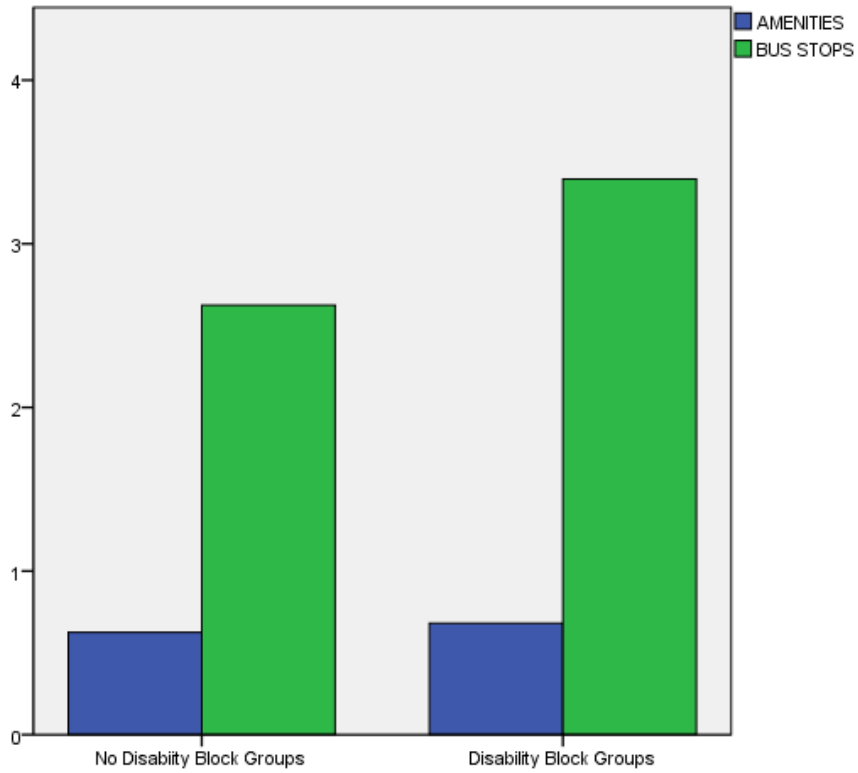
Figure 4.3.5 represents amenity levels and the percentage of disability population by block group. Of the 158 level 3 bus stops, 22 are located in areas with the highest disability population. In areas of the second highest disability populations, 39 contain level 3 bus stops. Almost half of all level 3 bus stops fall inside block groups with higher disability populations. Although this is a fair dispersal of higher amenity levels in these areas, there are still numerous level 1 and level 2 bus stops in these same areas because of the overall lack of stops with the highest amenity level throughout the city as a whole.

Figure 4.3.5: Amenity Levels and Percentage of Disability Population: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

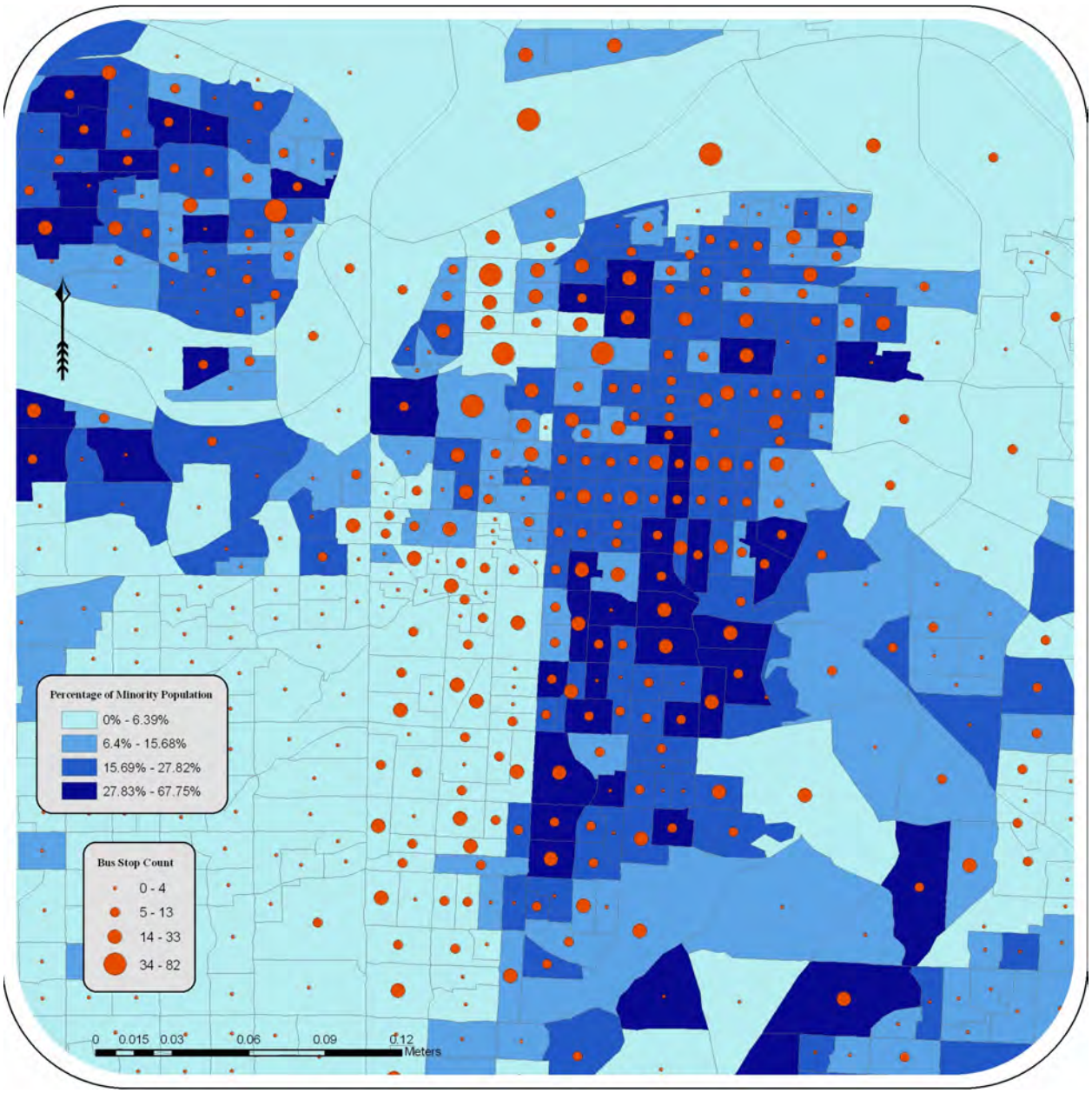
Figure 4.3.6: *Disability Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.6 is a bar graph showing bus stop counts and total amenities found in block groups with no disabilities and block groups with disabilities. Figure 4.3.6 results are very comparable to those found in the maps of Figure 4.3.5 and 4.3.4. There are slightly more amenities and much more bus stops in block groups with disabilities.

Figure 4.3.7: Bus Stop Counts and Percentage of Minority Population: Kansas City MO

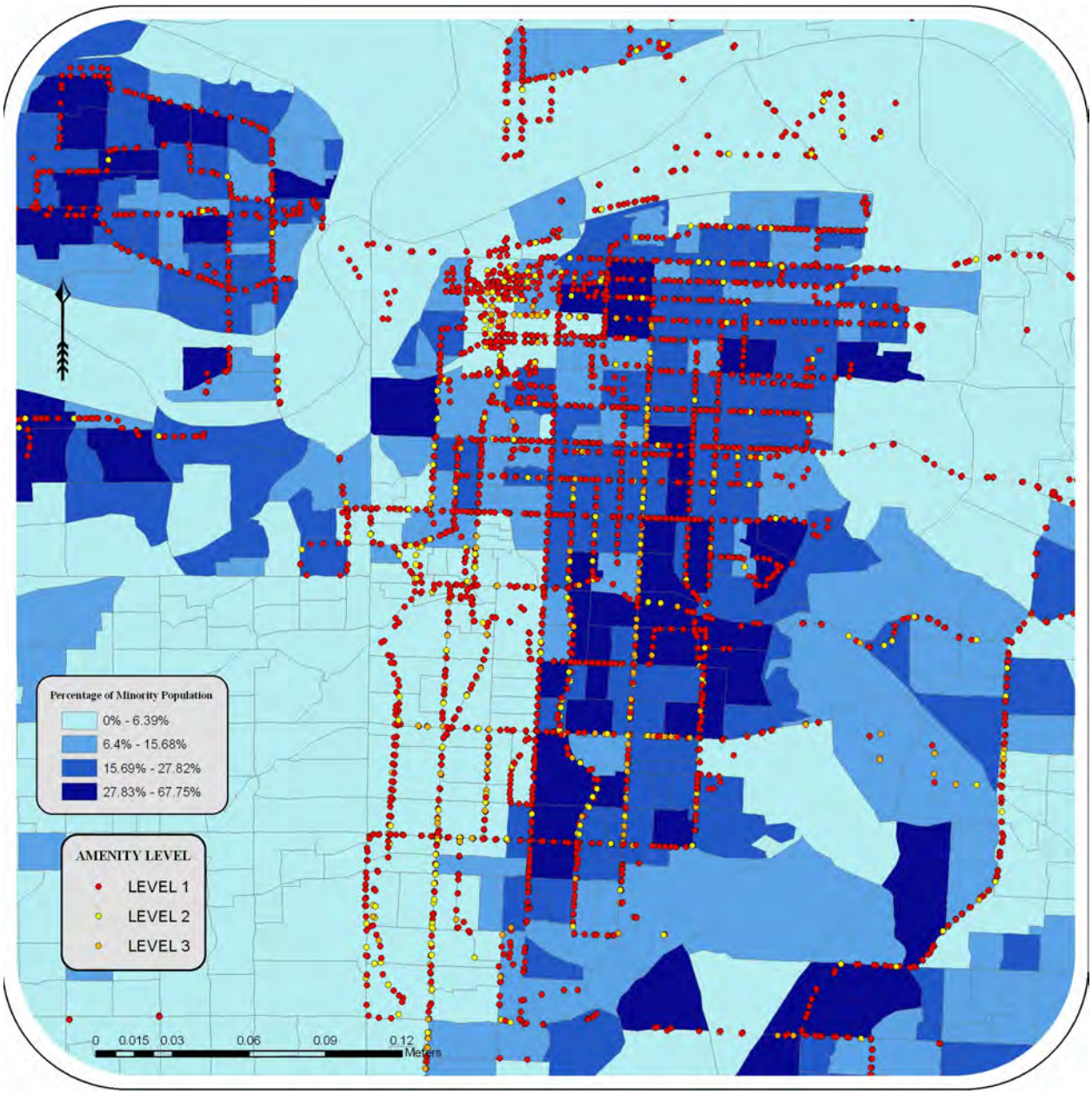


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.7 represents bus stop counts and the percentage of minority population by block group. Of the seven block groups containing the largest number of bus stops, only one falls inside a block group with the most minorities. Two of these block groups with the most bus stops fall inside areas with the second largest minority populations. Of course, the remainder falls inside areas in the lower to lowest minority population categories. Although there are few higher minority population block groups with the largest number of bus stops, there are still rather high categories of bus stops in most of these block groups. Overall, there seems to be significantly more bus stops in areas of higher minority populations in Kansas City. This is much attuned to the transportation equity idea.

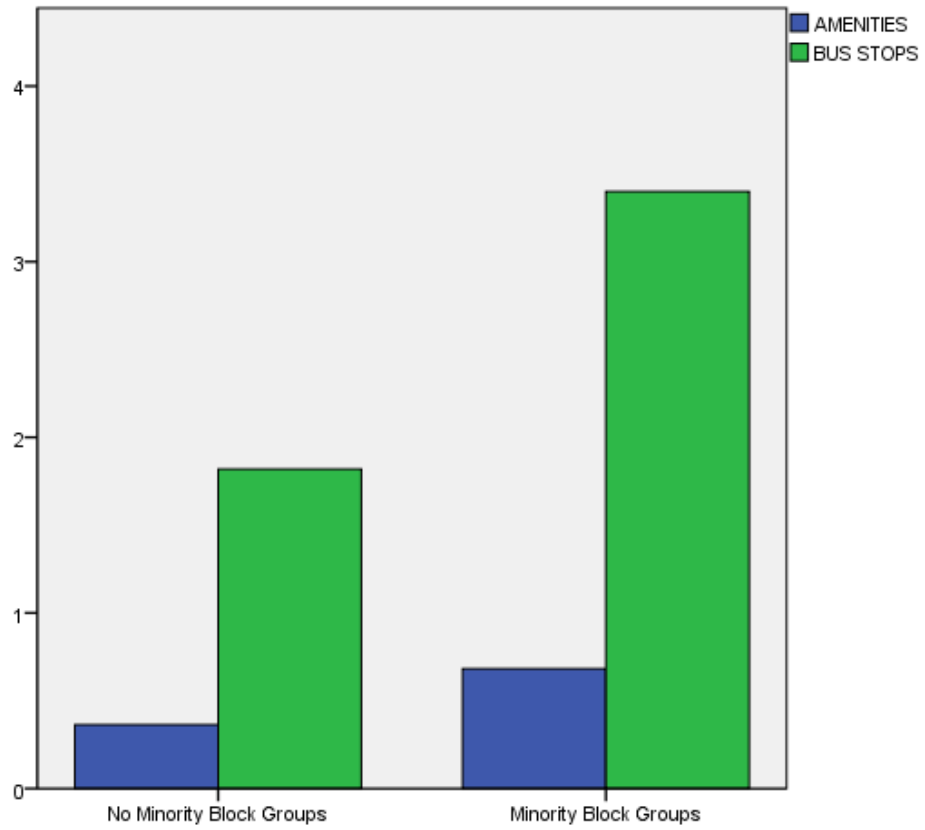
Figure 4.3.8 represents amenity levels and the percentage of minority population by block group. Of the 158 total level 3 bus stops, 92 are located in areas of the highest minority population. There are fifteen level 3 bus stops located in areas with the second highest minority population, with the rest falling in areas of lower to lowest minority populations. More than half of the level 3 amenity bus stops are located in areas of the highest minority populations; however, there are still an overwhelming number of bus stops in these same locations with level 1 and level 2 bus stops.

Figure 4.3.8: Amenity Levels and Percentage of Minority Population: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

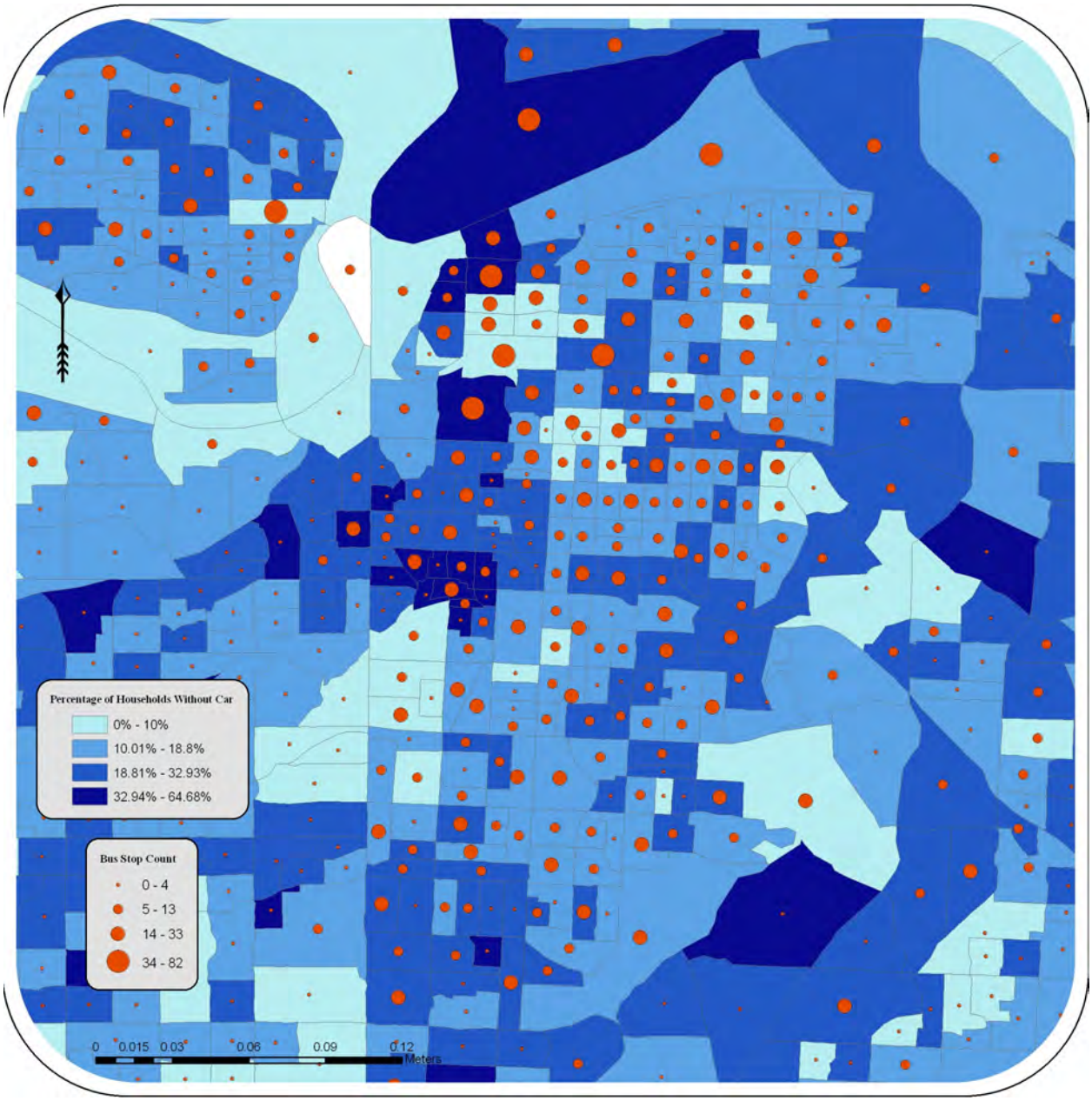
Figure 4.3.9: *Minority Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.9 is a bar graph showing bus stop counts and total amenities found in block groups with no minorities and block groups with minorities. Just like in the maps of Figure 4.3.7 and 4.3.8, the results shown in Figure 4.3.9 reveal a much higher bus stop count and total amenity count in areas of higher minority populations.

Figure 4.3.10: Bus Stop Counts and Percentage of Households without Car: Kansas City MO

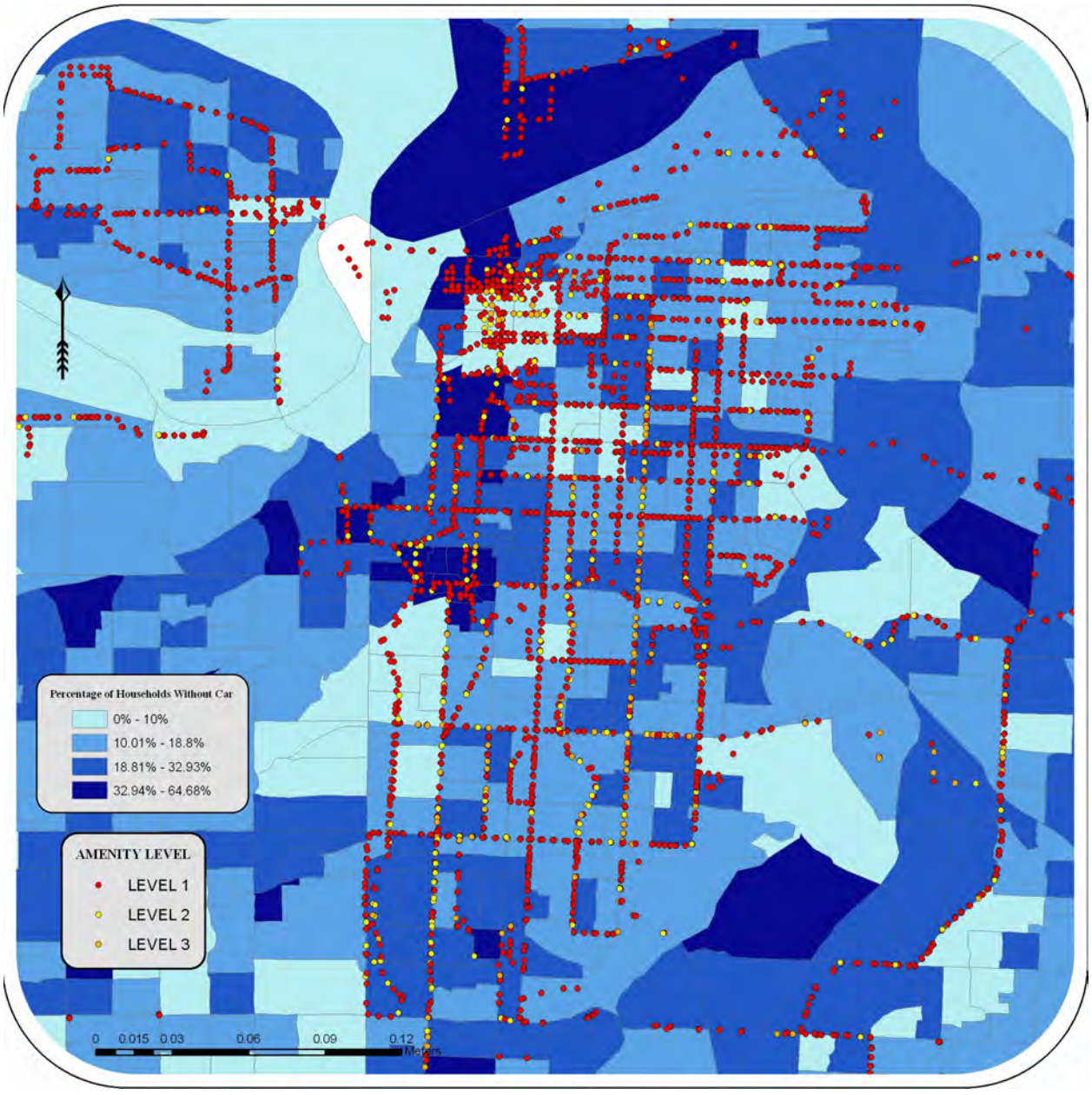


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.10 represents bus stop counts and the percentage of households with no car by block group. The map shows three out of seven block groups with the most of bus stops located in areas with the highest population percentage of households with no car. The areas with the second highest percentage of households with no car have one with the highest bus stop count. In the other block groups with the highest no car populations there are many containing a medium to high number of bus stops. Although there are a few outliers, there seems to be overall medium to high bus stop counts located in areas with the high percentages of no car households throughout the city.

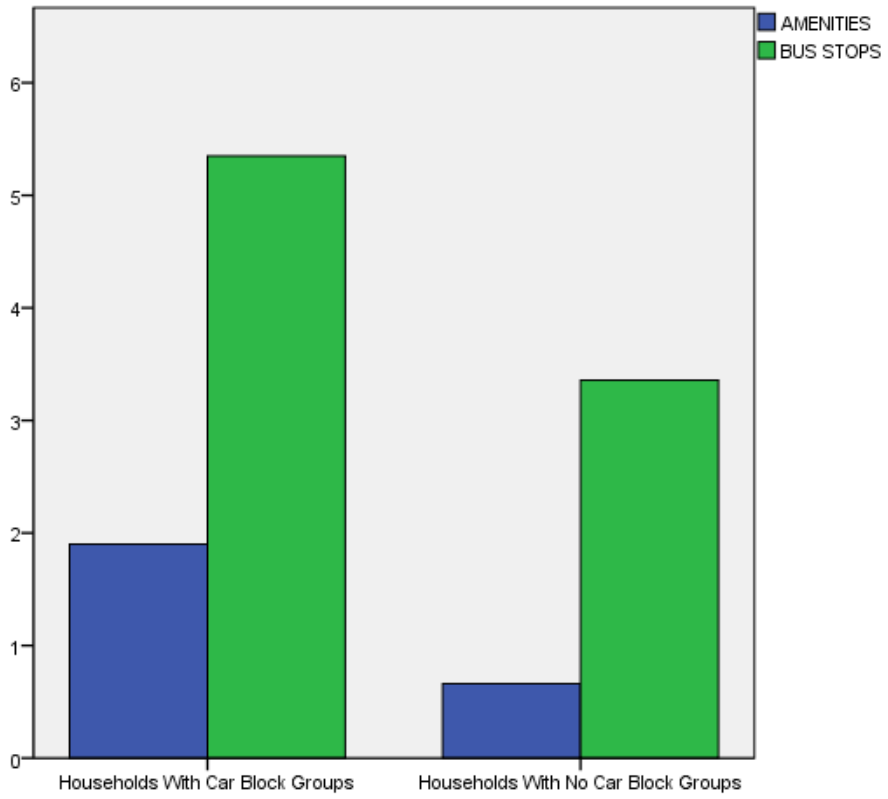
Figure 4.3.11 represents amenity levels and the percentage of households with no car by block group. In contrast to Figure 4.2.10 with the fair location of bus stops it is quite different with amenity levels. There are only nine of the 158 level 3 amenity bus stops located in areas of the highest no car household population, with numerous level 1 and level 2 bus stops in these same areas. There are, however, thirty-seven level 3 bus stops in the areas with the second highest no car population. At the same time, there are a plethora of level 1 and level 2 bus stops in these areas. The majority of the level 3 bus stops are located in areas of the lower to lowest populations of no car households. As mentioned before, assuming that one with no car might use public transportation more, there should be more bus stops and better amenities in these areas.

Figure 4.3.11: Amenity Levels and Percentage of Households without Car: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

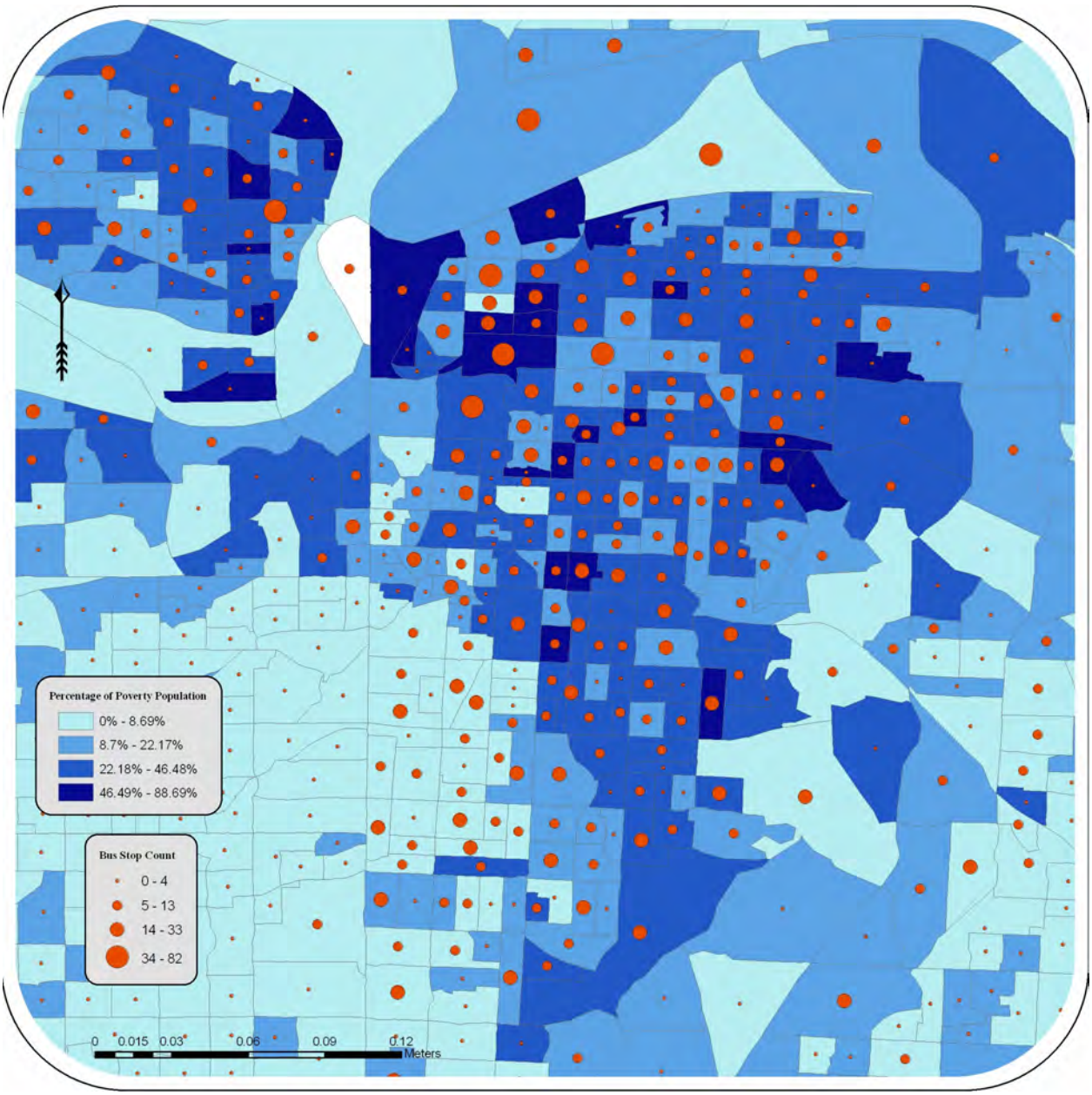
Figure 4.3.12: *No Car Household Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.12 is a bar graph showing bus stop counts and total amenities found in block groups with cars and block groups with no cars. Like the maps in Figure 4.3.10 and 4.3.11, the trend is the same in Figure 4.3.12, where there are far more bus stops and total amenities in areas of households who own cars versus areas with households who do not own cars.

Figure 4.3.13: Bus Stop Counts and Percentage of Poverty Population: Kansas City MO

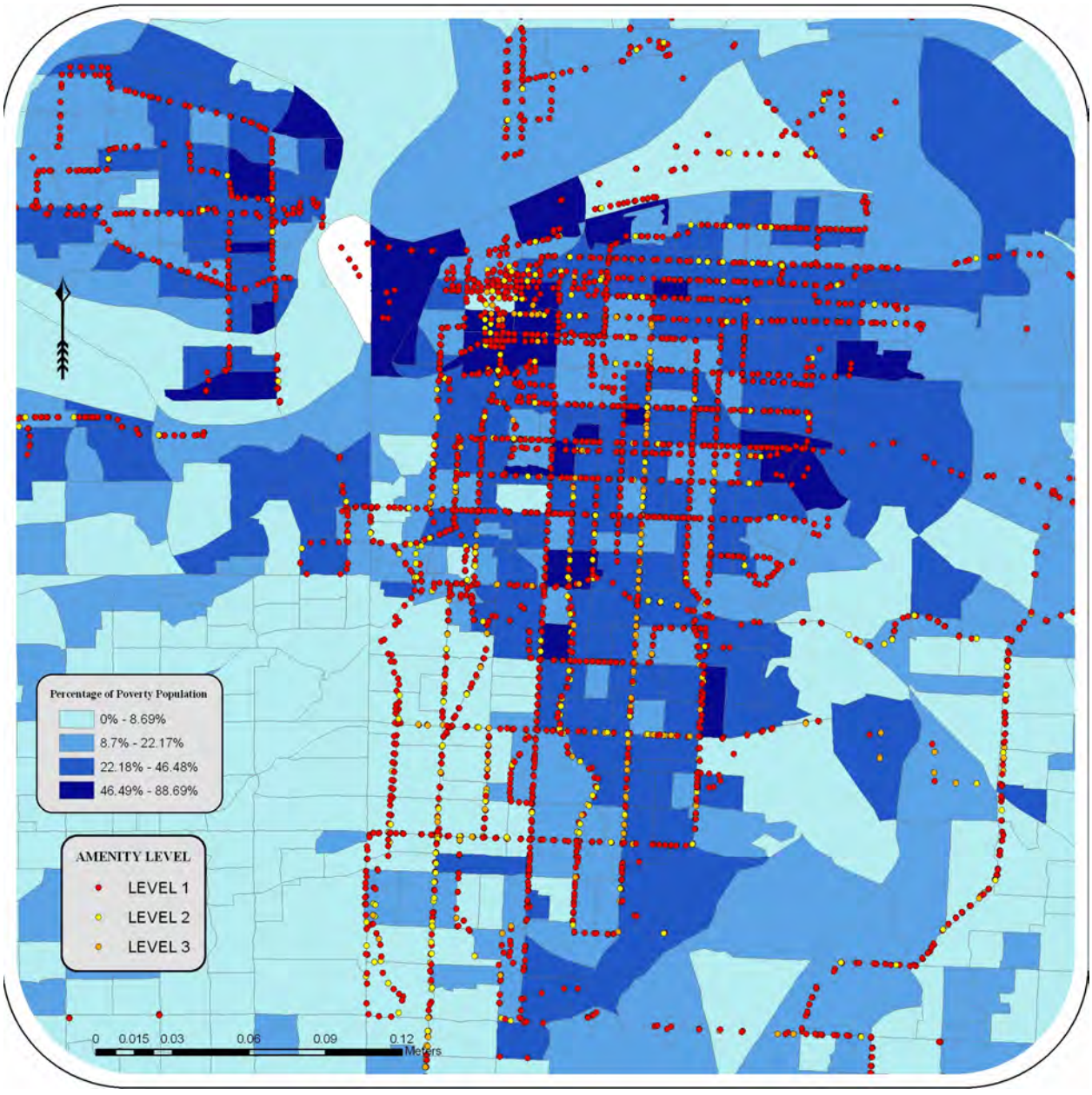


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.13 represents bus stop counts and the parentage of poverty population by block group. Of the seven block groups containing the most bus stops, one is located in an area of the highest poverty population. Two of those are in areas of the second highest poverty population. The remaining four are in areas of lower to lowest populations of those living in poverty. Of the other areas of the highest poverty populations, many contain lower to lowest bus stop counts. As for the areas with the second highest poverty populations, there seems to be a larger number of bus stops in each block group. In the southwest region of the city, there is a very small population living in poverty and significantly fewer bus stops. Overall, there appears to be a fair dispersal of bus stops to those living in poverty that might use or need public transit more than others.

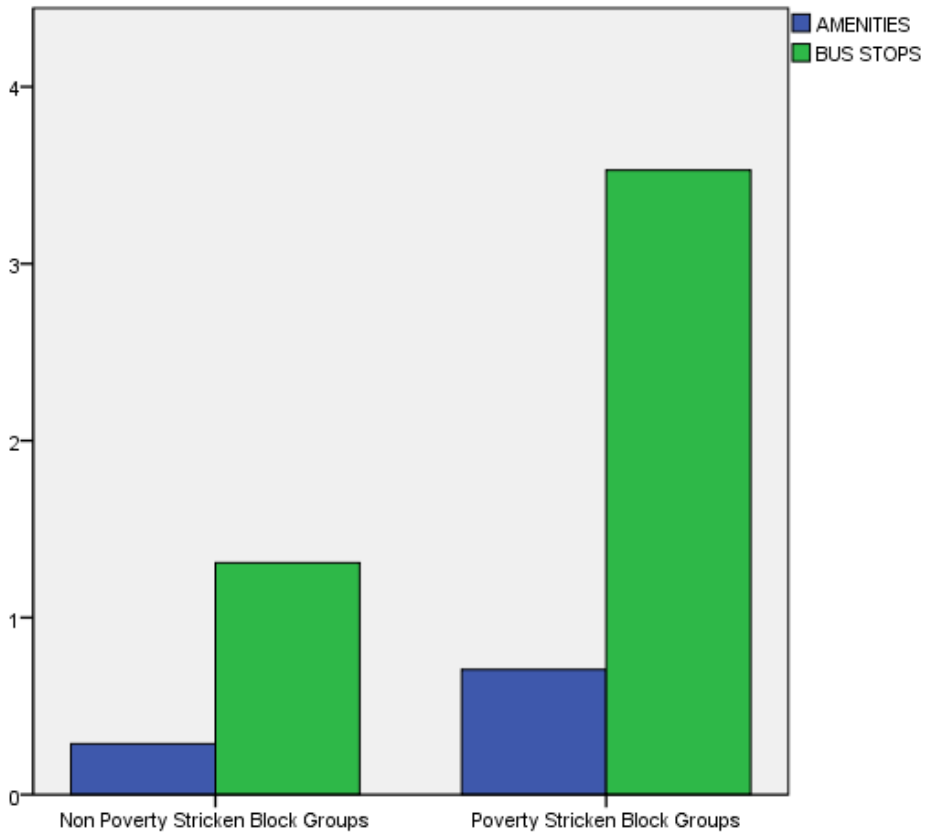
Figure 4.3.14 represents amenity levels the percentage of poverty population by block group. Fourteen out of the 158 level 3 bus stops fall inside block groups with the highest poverty population as do over one hundred of the 3764 level 1 amenity bus stops. There are 61 level 3 bus stops located in areas with the second highest poverty population. This number seems high, but it is well under half of the total number of level 3 bus stops in the city. Most of the level 3 bus stops are located in areas with the lower to lowest population living in poverty. Although there are numerous bus stop locations in the areas with more poverty, there is a dearth of high amenities at those bus stops.

Figure 4.3.14: Amenity Levels and Percentage of Poverty Population: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

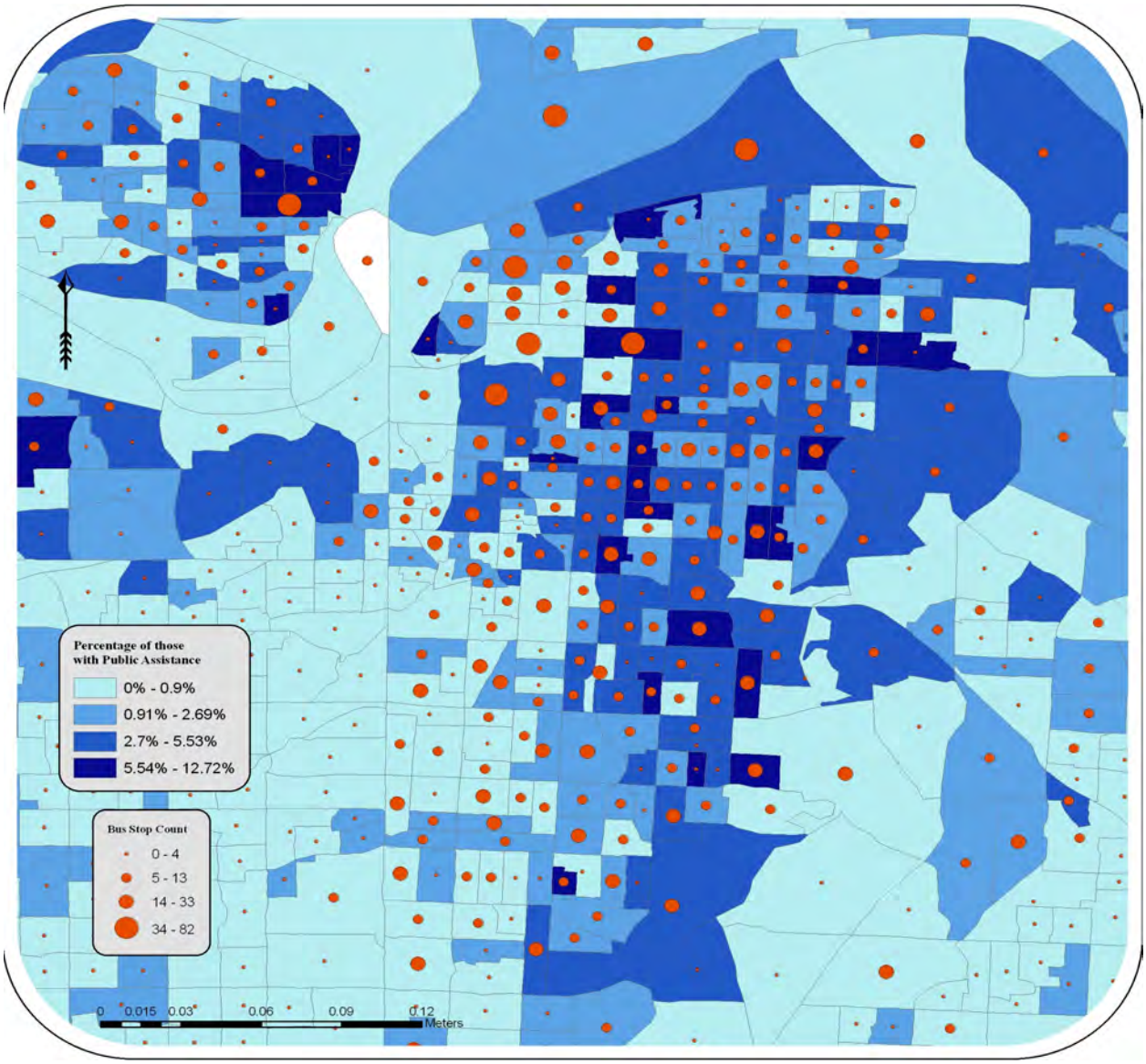
Figure 4.3.15: *Poverty Stricken Block Groups in Relation to Bus Stop and Amenity Locations*



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.15 is a bar graph showing bus stop counts and total amenities found in block groups with no poverty and block groups with poverty. As shown in Figure 4.3.15, there are significantly more bus stops in block groups with poverty versus those without poverty. Figure 4.3.15 also shows that there are more total amenities in block groups with poverty, although according to Figure 2I, there is a lack of bus stops with high amenities in these areas.

Figure 4.3.16: Bus Stop Counts and Percentage of Population with Public Assistance: Kansas City MO

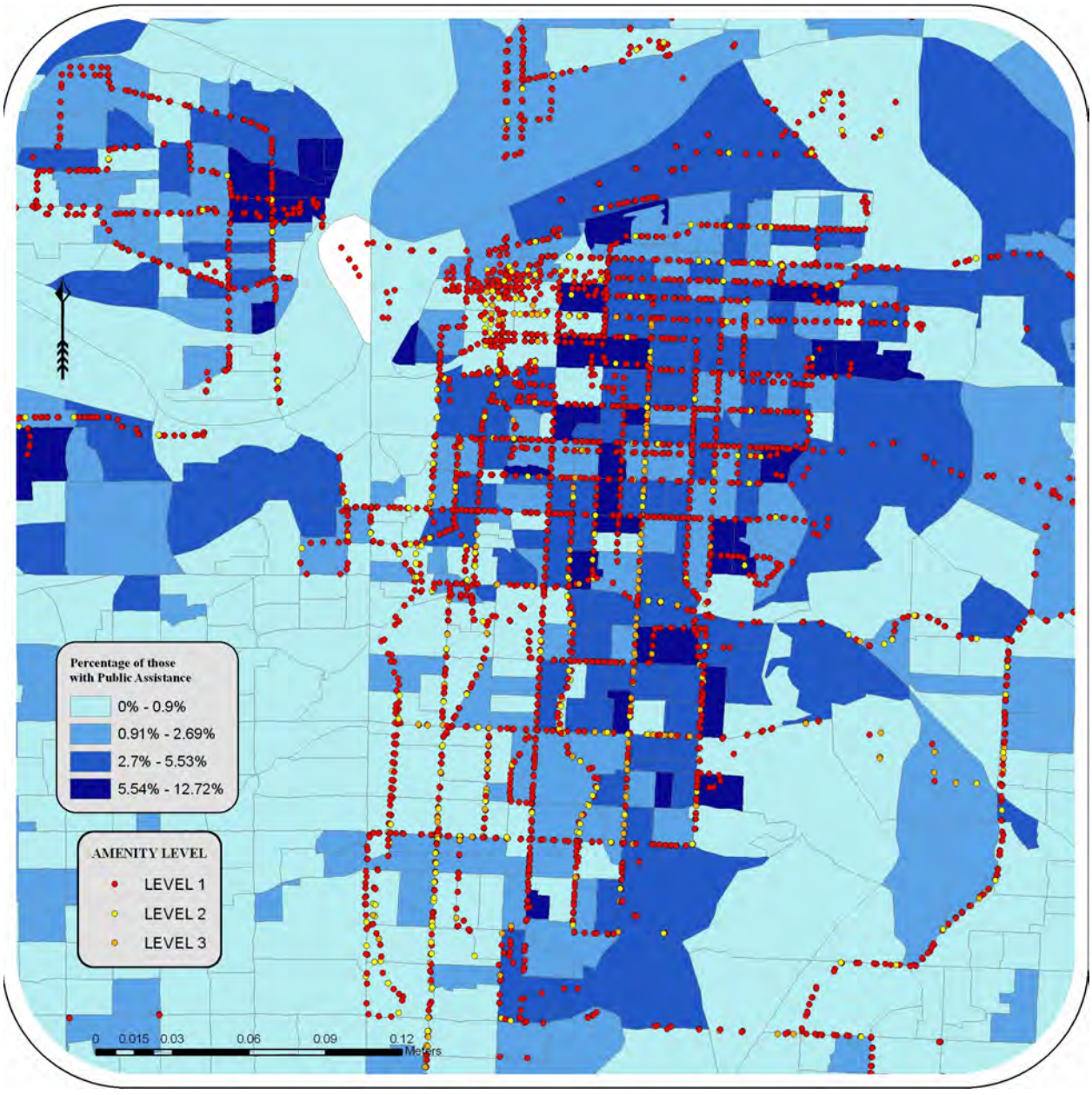


Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.16 represents bus stop counts and the percentage of population receiving public assistance by block group. Of the seven block groups with the highest bus stop count, two are found in block groups with the highest public assistance populations and two are found in block groups with the second highest public assistance population. There is only one of block group with the lowest public assistance population containing the highest bus stop count. For the remaining block groups with the largest population on public assistance, there are many with high to very high bus stop counts. The southwest region of the city which has a low population of those receiving public assistance, has significantly fewer bus stops. Overall, there seems to be a level and just distribution of bus stops for those in need.

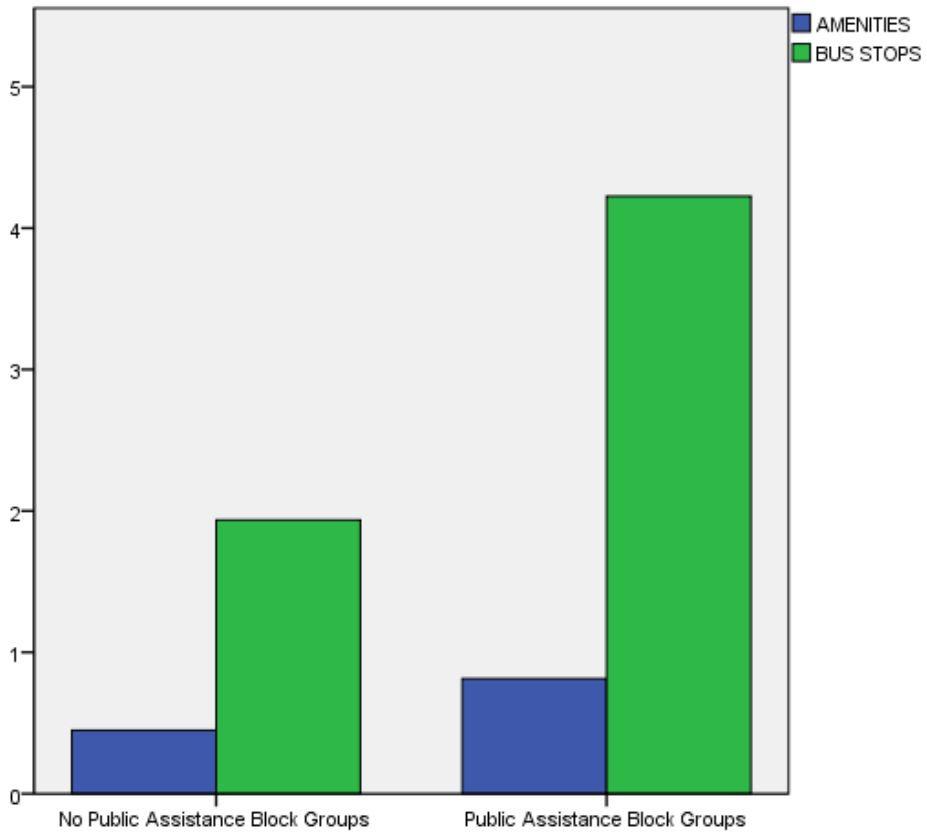
Figure 4.3.17 represents amenity levels and the percentage of population receiving public assistance by block group. Sixteen out of the 158 level 3 bus stops are located in block groups of the highest public assistance populations. There are well over one hundred out of 4432 level 2 and level 1 bus stops in these same areas. There are forty eight level 3 bus stops in areas with the second highest percentage of public assistance recipients, which is well under half of the total number of level 3 bus stops. The majority of level 3 bus stops are located in areas of lower to lowest populations of those receiving public assistance. This is the same trend as those living in poverty for Kansas City. Once again, although there are plenty of bus stops in these locations where they are needed more, there is a deficiency of higher amenities throughout.

Figure 4.3.17: Amenity Levels and Percentage of Population with Public Assistance: Kansas City MO



Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.18: *Public Assistance Block Groups in Relation to Bus Stop and Amenity Locations*



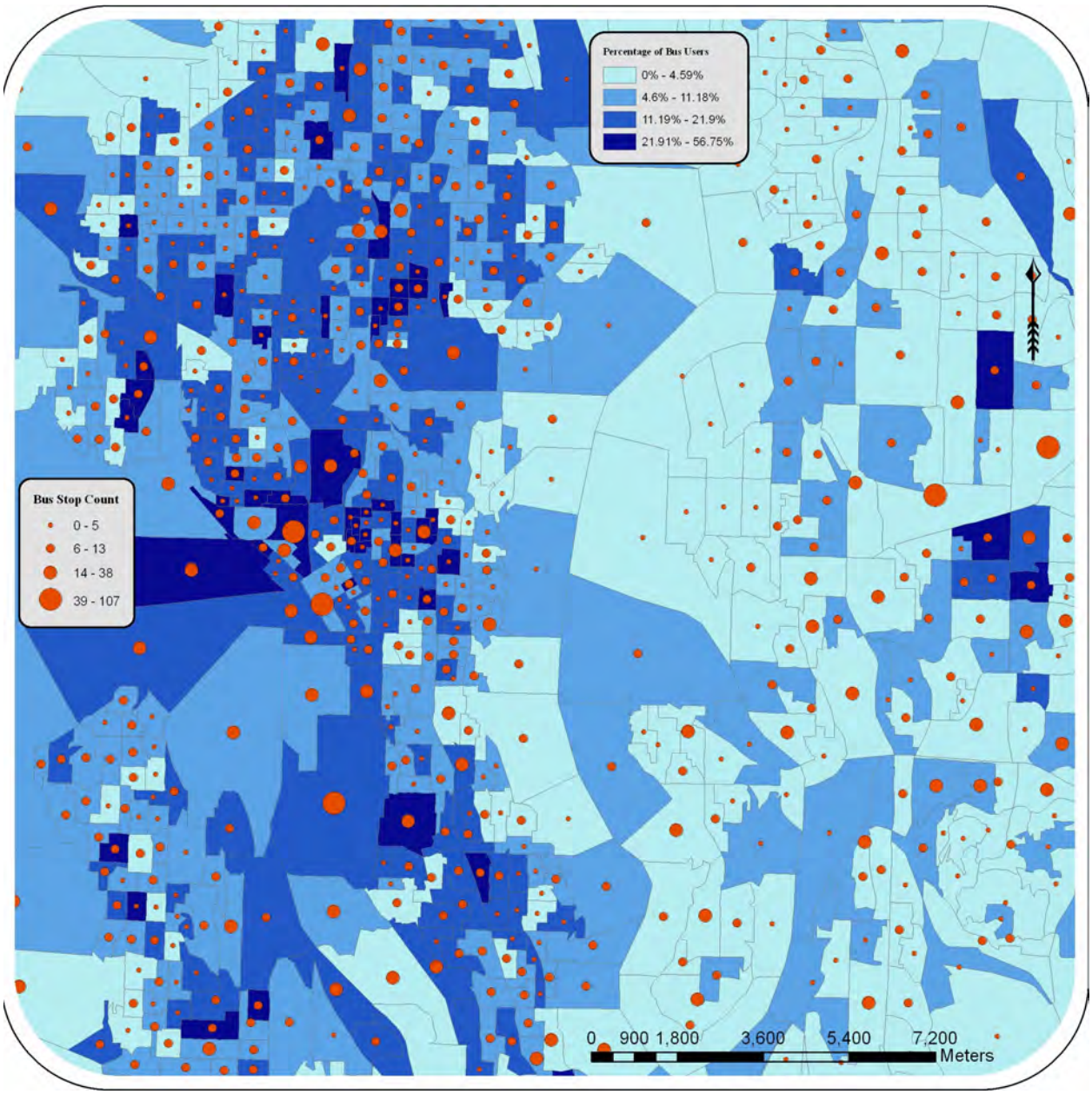
Sources: US Census Bureau, 2000; KCATA, 2009

Figure 4.3.18 is a bar graph showing bus stop counts and total amenities found in block groups with no public assistance and block groups with public assistance. The results in Figure 4.3.18 coincide with those in Figure 4.3.16; where there are definitely more bus stops located in block groups with higher public assistance populations. There are also more total amenities in these areas, although as shown in Figure 4.3.18; there is a lack of bus stops with high amenities.

4.4 Seattle, WA

Before analyzing the maps in this section, the Table 2 in section 4.1 is represented to show the number of bus stops of each amenity level for Seattle, WA. Seattle contrasted greatly in terms of higher amenity level with those of Greensboro and Kansas City. Although they have far more total bus stops, they have a much higher percentage of those stops with amenity levels 4 and 3. They have a total of 1661 level 4 bus stops compared to 0 in Kansas City. They also have 3154 level 3 bus stops compared to the dismal 10 in Greensboro. Although these numbers are higher, the question must be answered whether they are located in the places of greatest need. The number of bus stops and higher amenity levels will now be analyzed regarding where they are located spatially on the maps and if they are in areas where they are needed or used the most.

Figure 4.4.1: Bus Stop Counts and Percentage of Bus Users: Seattle, WA

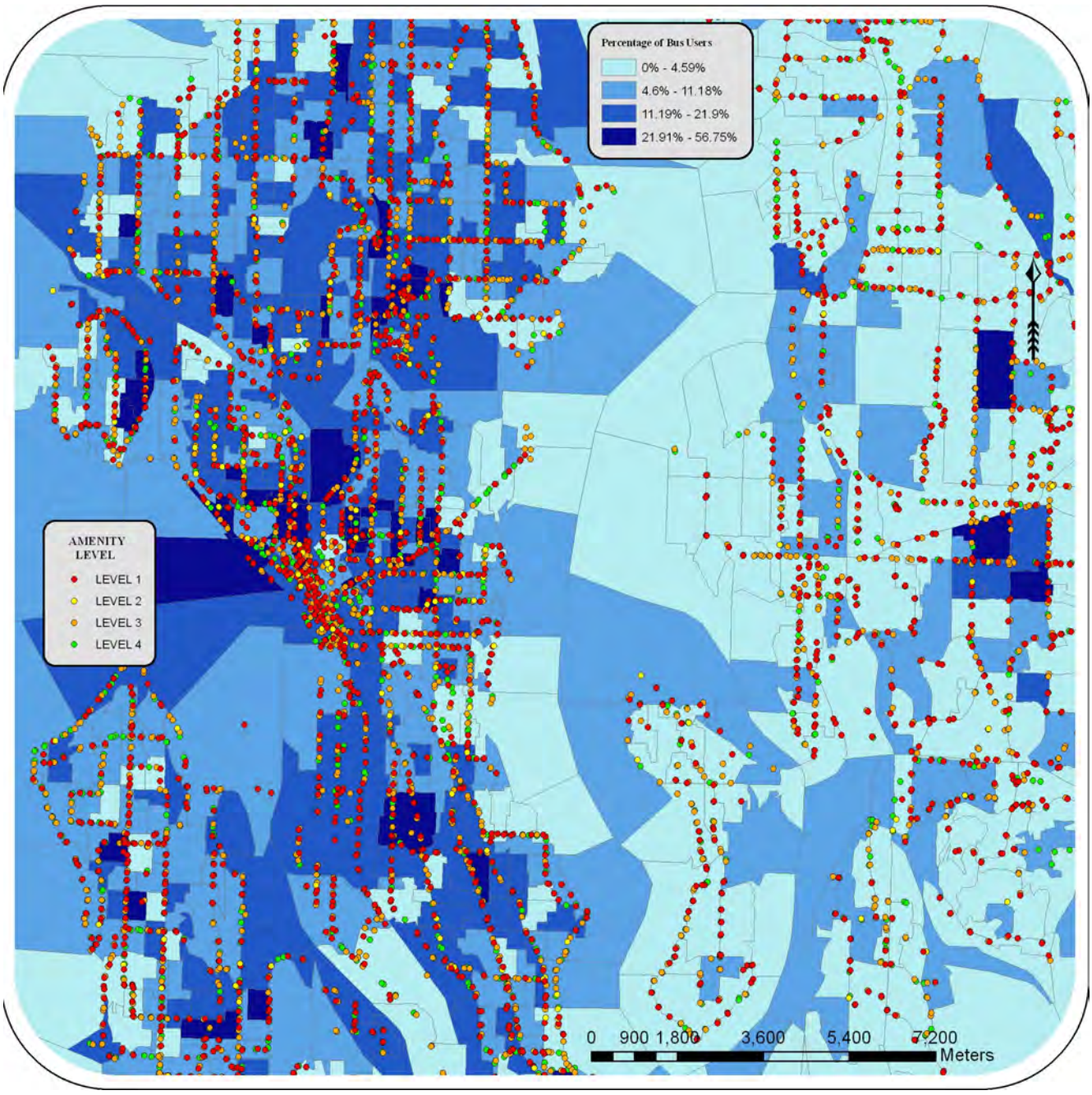


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.1 represents bus stop counts and the percentage of bus users by block groups for Seattle, WA. Of the seven block groups containing the highest bus stop count, none are found in areas of the highest populations of bus riders. Only one is found in the area of the second highest population of bus riders, while the others are in areas with the lower to lowest population of bus riders. In the areas of the second highest population of bus riders, however, many contain a moderate number of bus stops. Overall, while there could be more bus stops in these areas, there seems to be an overall fair distribution throughout.

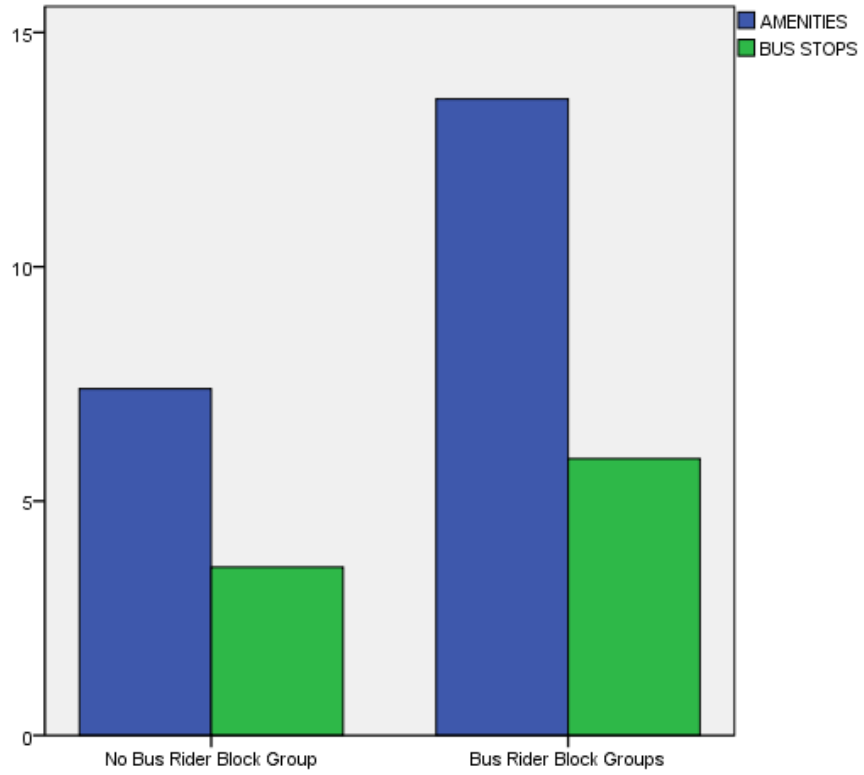
Figure 4.4.2 represents amenity levels and the percentage of population of bus users by block group. Of the two block groups with the highest population of bus riders, there are only four of 1661 level 4 bus stops. In these same block groups, there are five of 3154 amenity level 3 bus stops. In the block groups with the second highest bus rider population, there are thirty-six level 4 bus stops. This seems like a large number of high amenity bus stops, but there are over sixty of 4228 level 1 and level 2 bus stops in these same areas. The majority of level 4 bus stops are located in areas of low populations of bus riders. The location of high amenities should be more evenly dispersed in throughout the areas of higher populations of bus riders.

Figure 4.4.2: Amenity Levels and Percentage of Bus Users: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

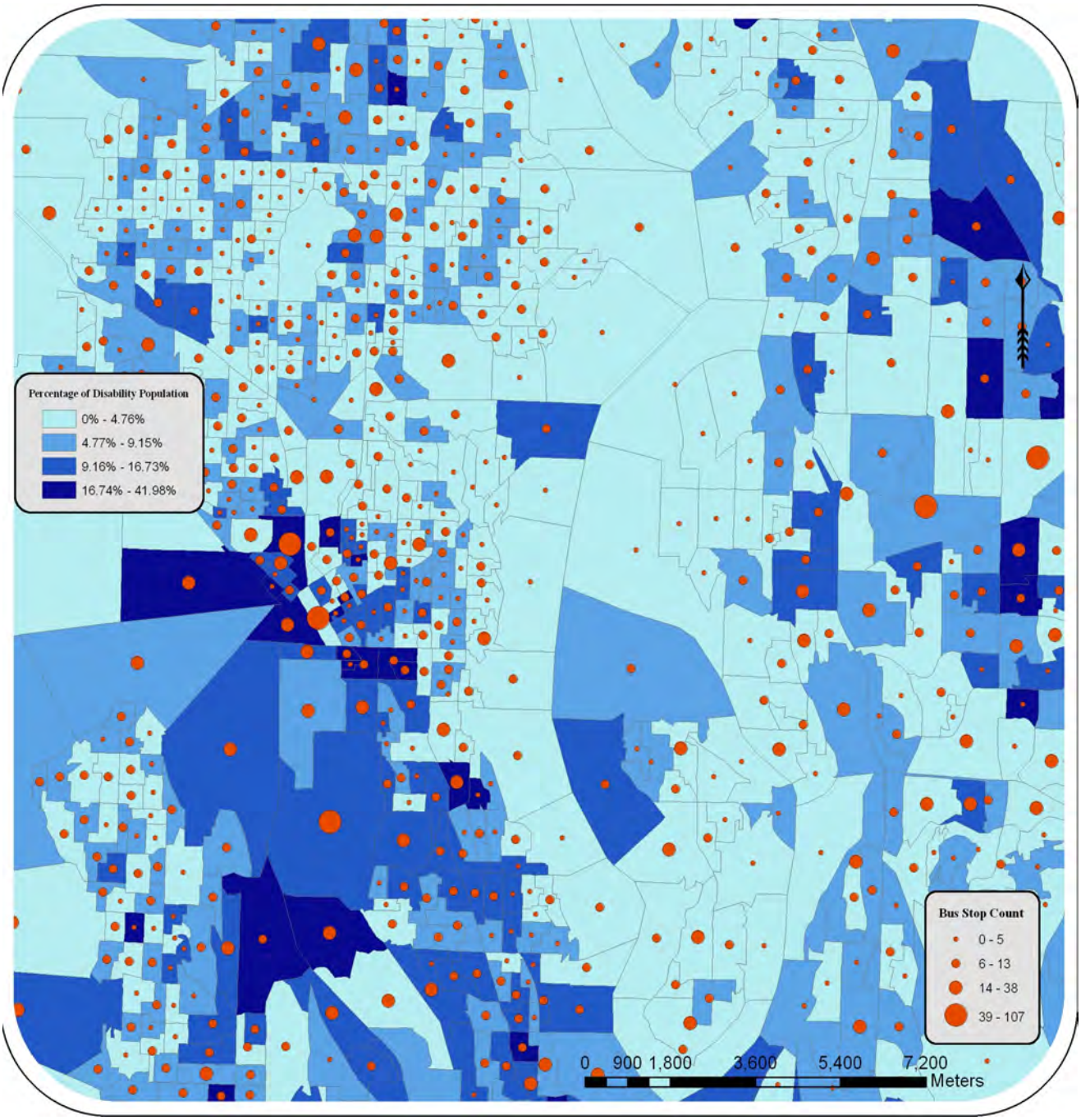
Figure 4.4.3: *Bus User Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.3 is a bar graph showing bus stop counts and total amenities found in block groups with no bus riders and block groups with bus riders. Although 4.4.1 seems to have more bus stops located in areas of lower bus riders, Figure 4.4.3 shows otherwise. Figure 4.4.1 shows more bus stops are located in block groups with bus riders versus those without. Note, this graph represents block groups with completely no bus riders, versus those with any number of bus riders whereas the maps show four different classifications of bus rider populations which could explain the contrasting results.

Figure 4.4.4: Bus Stop Counts and Percentage of Disability Population: Seattle, WA

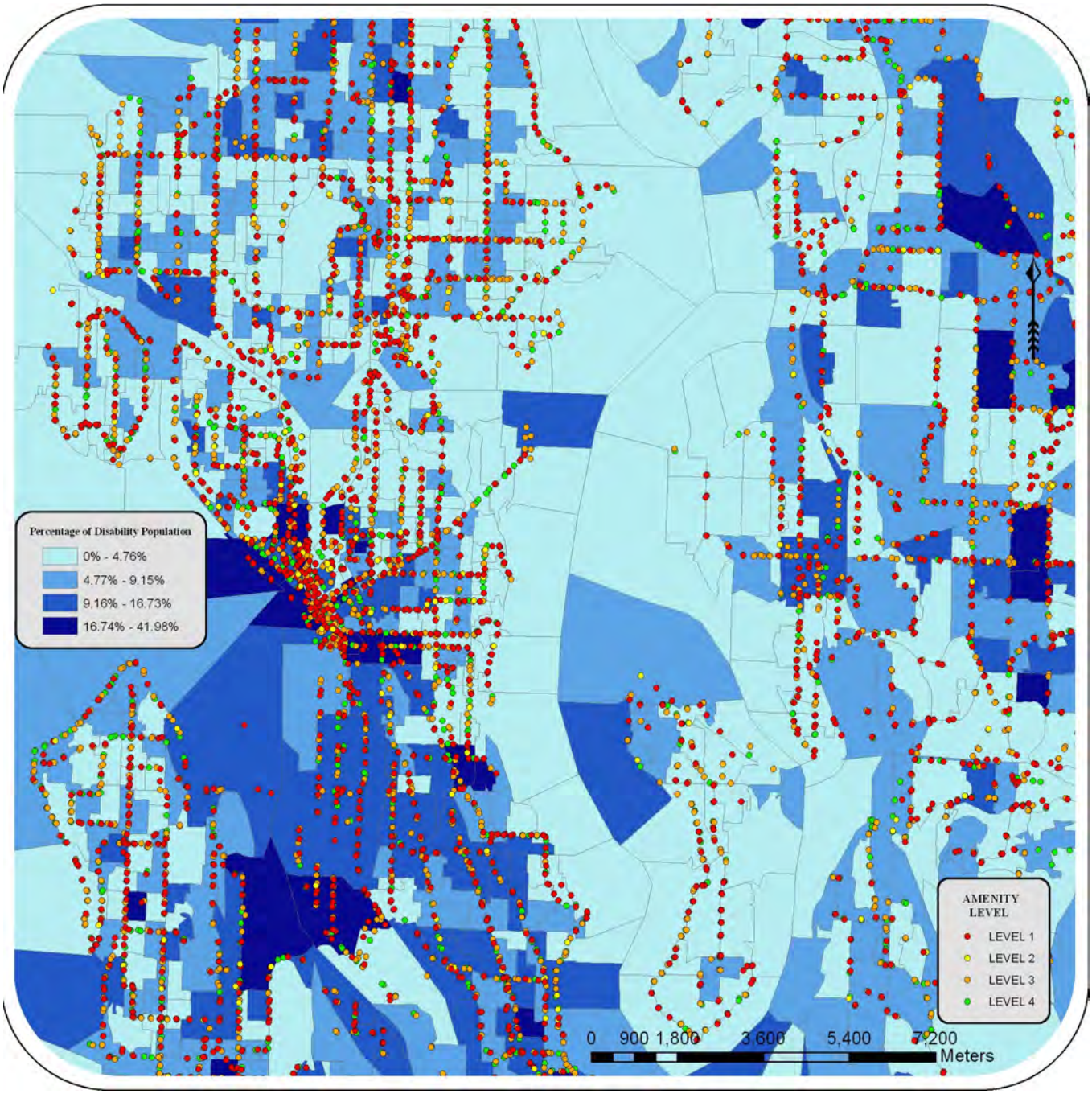


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.4 represents bus stop counts and the percentage of disability population by block group. Of the seven block groups containing the highest bus stop counts, none falls inside areas of the highest disabled populations and only one falls inside areas of the second highest disabled population. The bulk of the block groups with the highest disabled populations contain the lower to lowest number of bus stops with one exception. The majority of block groups with the highest bus stop counts fall within areas of lower disabled populations, contradicting the transportation equity initiative.

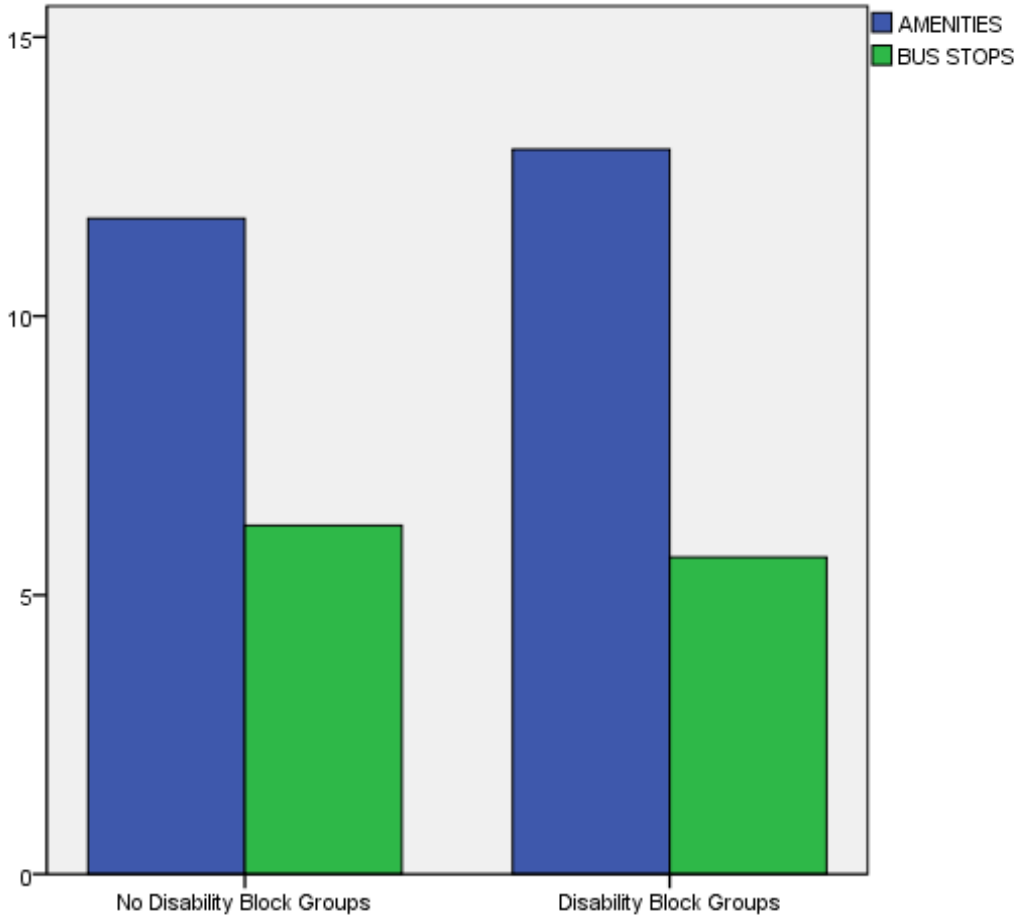
Figure 4.4.5 represents amenity levels and the percentage of disability population by block group. Of the 1661 total amenity level 4 bus stops, only sixteen are located in areas of the highest and second highest disability population. Of the 3154 total amenity level 3 bus stops, only 35 are located in these same areas, which contain over sixty of 4228 level 1 and level 2 bus stops. The number of level 1 and level 2 bus stops are almost double those of level 4 and level 3 in these areas. The bulk of high amenity level bus stops are located in areas where there are very few disability populations. This too is in contrast to transportation equity.

Figure 4.4.5: Amenity Levels and Percentage of Disability Population: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

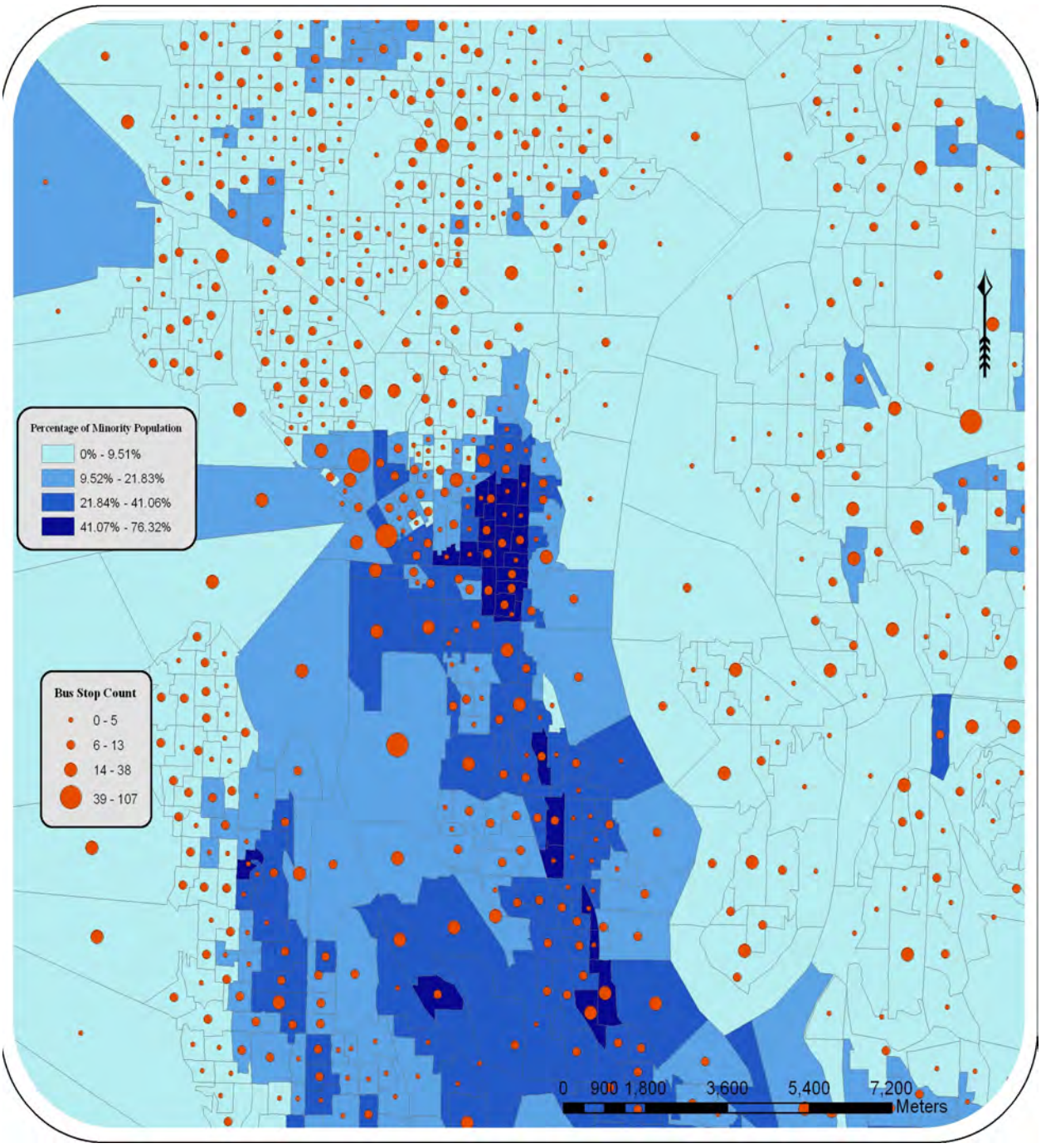
Figure 4.4.6: *Disability Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.6 is a bar graph showing bus stop counts and total amenities found in block groups with no disabilities and block groups with disabilities. Figure 4.4.6 corresponds with the results in Figure 4.4.4. There are more bus stops located in areas of lower disability populations. However, Figure 4.4.6 does show more amenities are located in block groups with higher disability populations, though not by much.

Figure 4.4.7: Bus Stop Counts and Percentage of Minority Population: Seattle, WA

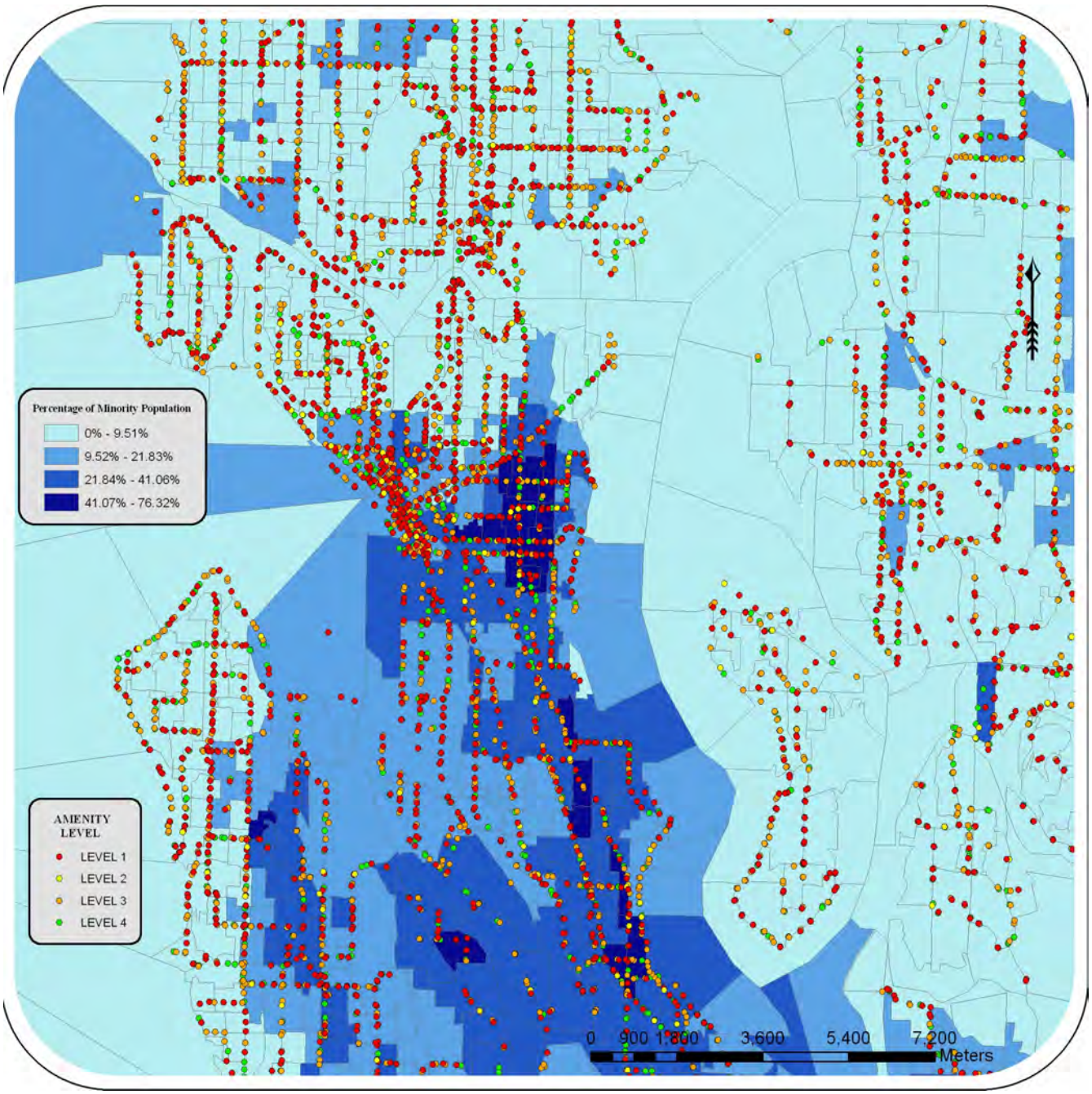


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.7 represents bus stop counts and the percentage of minority population by block group. Of the seven block groups with the highest bus stops counts, none are located in areas with the highest minority populations and one falls inside an area with the second highest minority populations. Although some block groups with low minority populations contain high bus stops counts, there is an overall fair distribution of bus stop counts throughout. As mentioned before, these are areas where more bus stops are needed more and this trend seems to meet that approach.

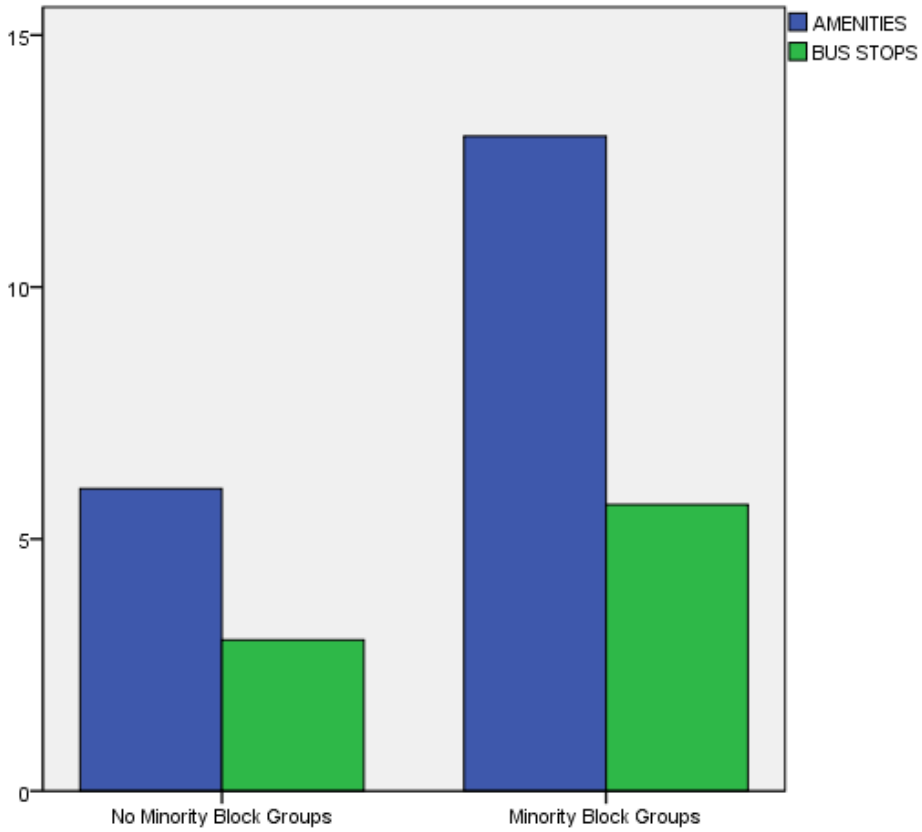
Figure 4.4.8 represents amenity levels and the percentage of minority population by block group. Of the 1661 total amenity level 4 bus stops, thirty-six are located in areas with the highest minority population. Of the 3154 total amenity level 3 bus stops, there are twenty-eight located in these same areas. There are a total of 198 bus stops in areas of the highest minority population, which means that less than half of those stops are at the amenity level 3 and 4. This again does not meet the needs of these people in terms of transportation equity. There should be more amenities at each stop assuming that this population will depend more on public transportation.

Figure 4.4.8: Amenity Levels and Percentage of Minority Population: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

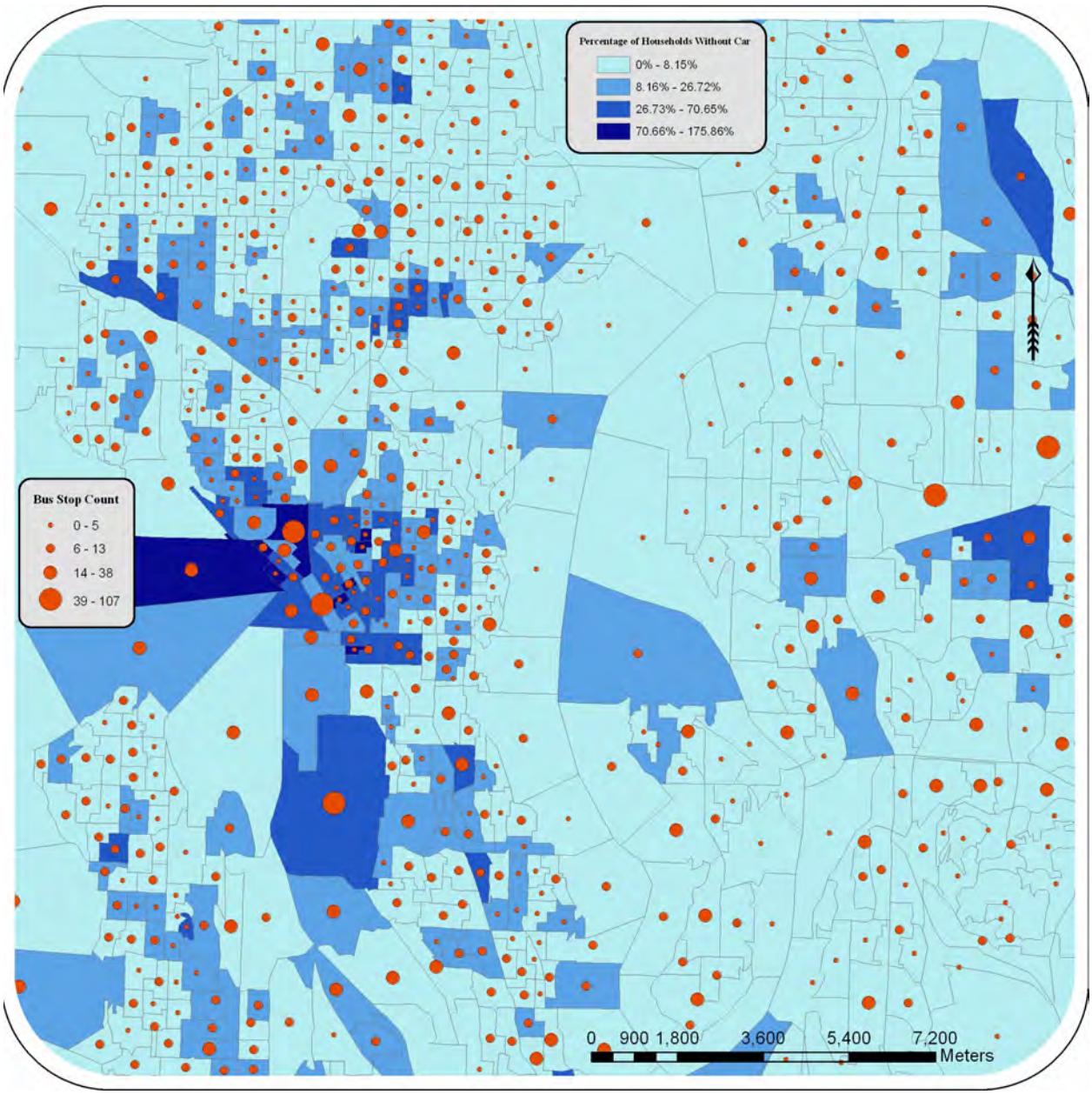
Figure 4.4.9: *Minority Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.9 is a bar graph showing bus stop counts and total amenities found in block groups with no minorities and block groups with minorities. Figure 4.4.9 shows more bus stops are located in block groups with minorities versus those without any. Total amenities in block groups with minorities far outweigh those in block groups without minorities, although there are fewer bus stops with high amenities in these areas represented in Figure 4.4.9.

Figure 4.4.10: Bus Stop Counts and Percentage of Households without Car: Seattle, WA

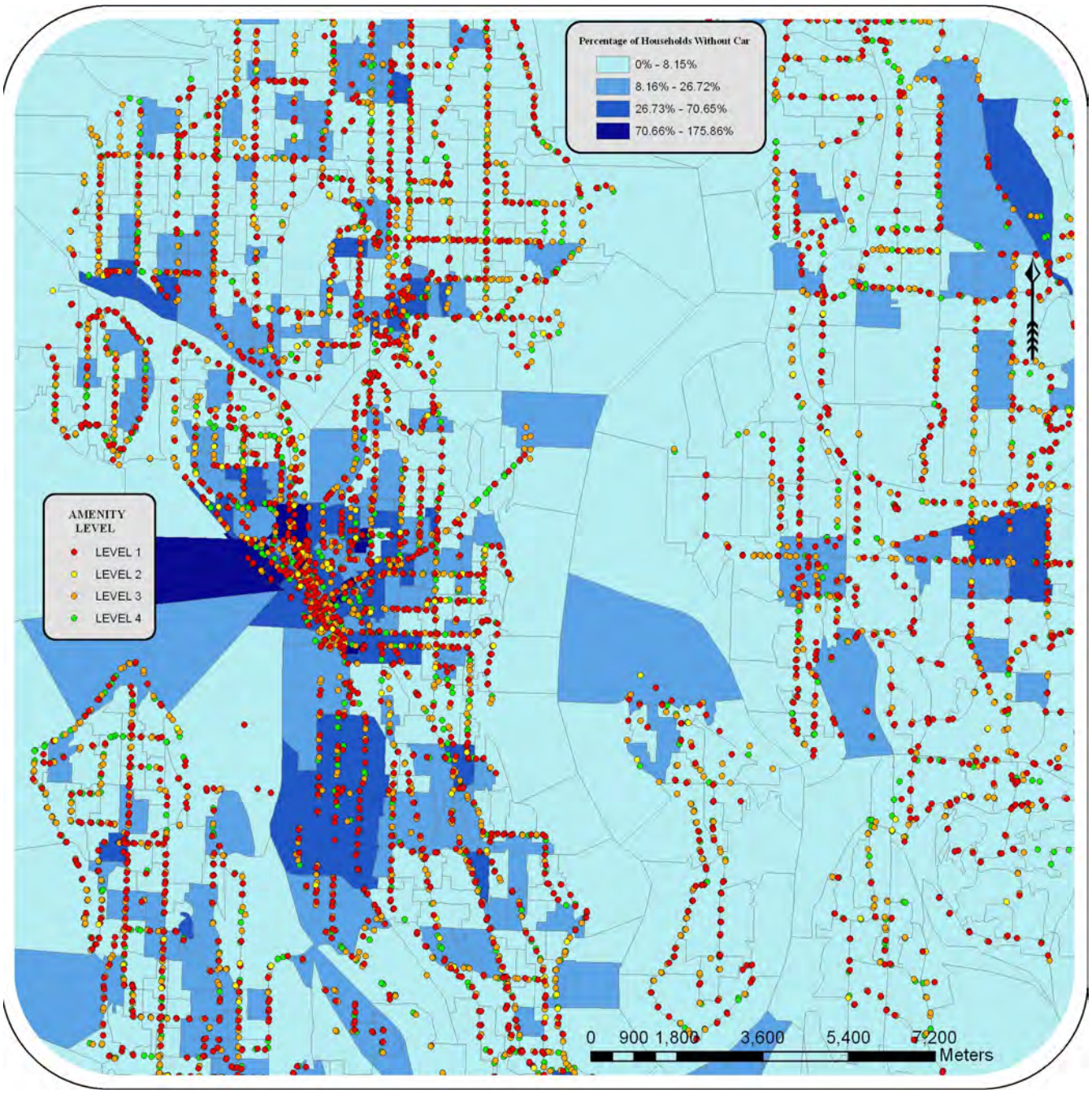


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.10 represents bus stop counts and the percentage of households with no car by block group. One of the block groups of the highest no car population contains the highest concentration of bus stops. Also the areas of the second highest no car population contains high bus stop counts. Overall there is an even distribution of bus stops throughout. As mentioned before, if we are to assume that those with no car will rely greater on public transportation, then the dispersal of bus stops in these areas is well placed.

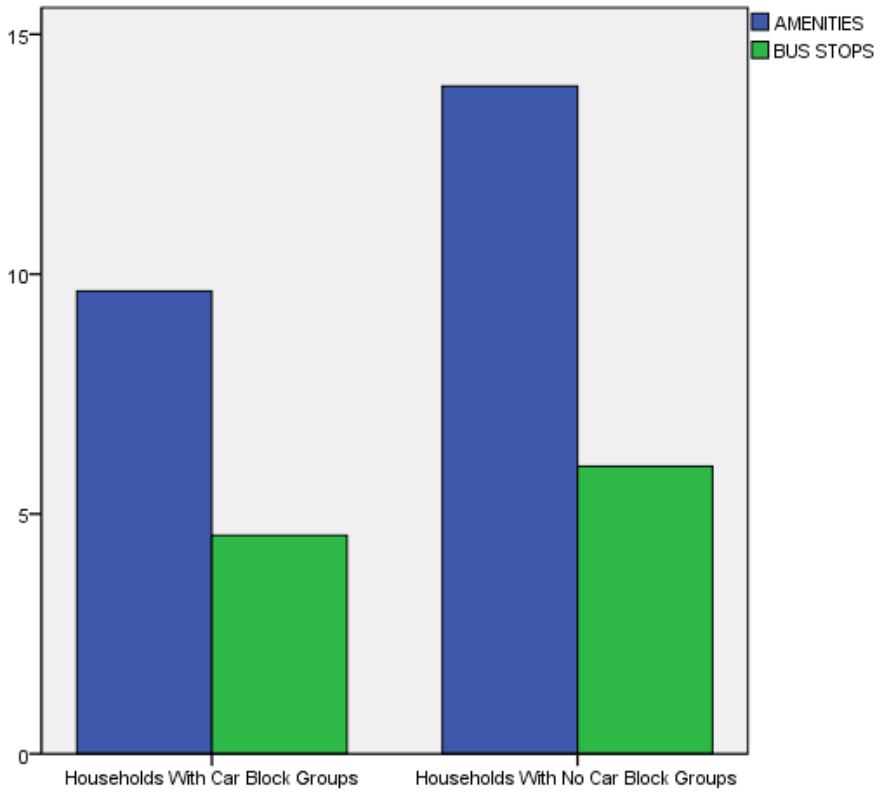
Figure 4.4.11 represents amenity levels and the percentage no car households by lock group. Of the 1661 total amenity level 4 bus stops, only six fall inside areas of the highest no car population as do only sixteen level 3 amenity level bus stops. There are a total of sixty-three total bus stops in these areas which means there are almost triple the number of lower amenity bus stops versus high amenity bus stops in these areas. The same goes for the areas of the second highest no car population. In the areas with the second highest no car population, there are a total of twenty three amenity level 4 bus stops and twenty-nine amenity level 3 bus stops. Presuming this population will depend more on public transit, there is a need for better amenities in these areas.

Figure 4.4.11: Amenity Levels and Percentage of Households without Car: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

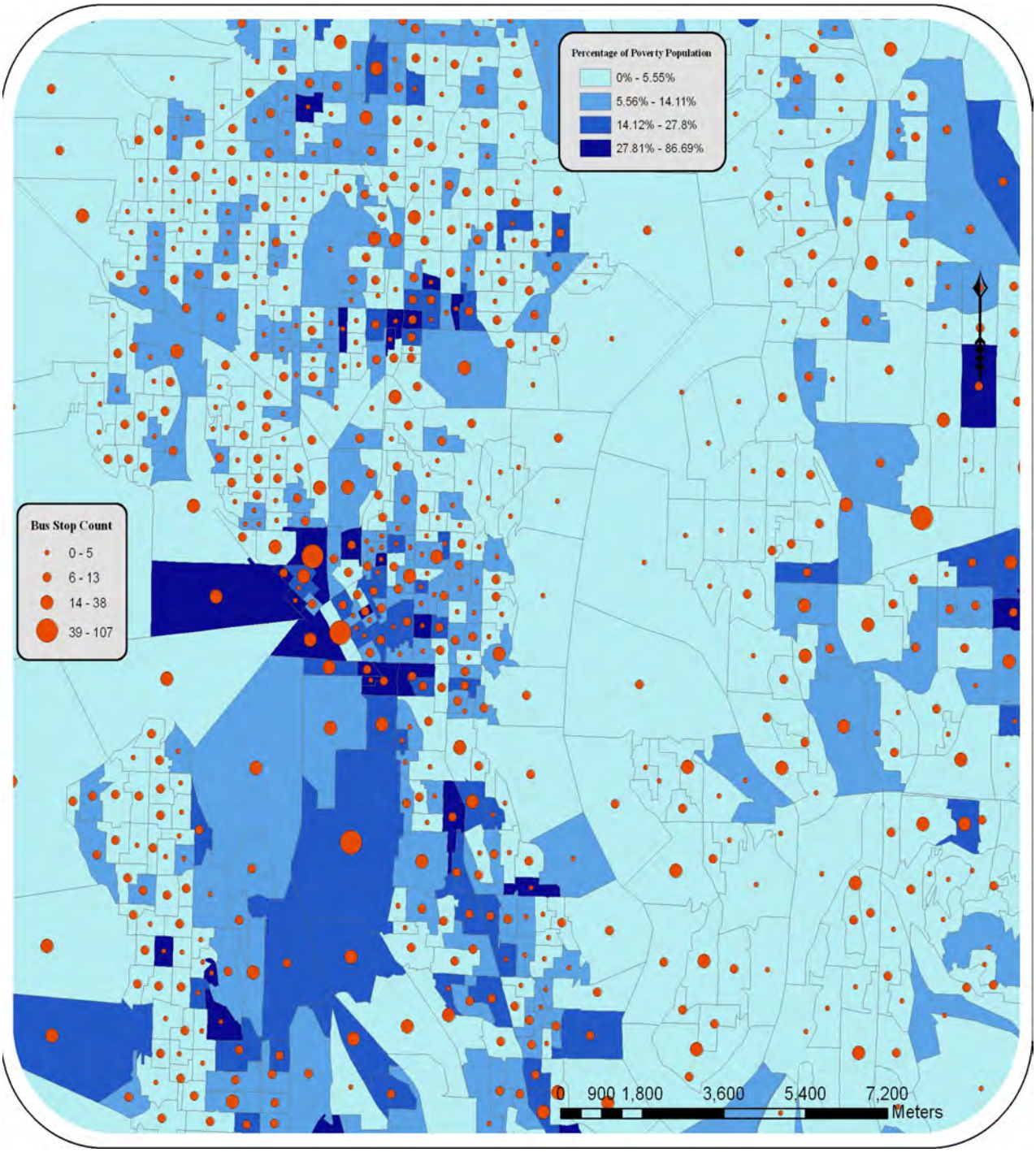
Figure 4.4.12: *No Car Household Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.12 is a bar graph showing bus stop counts and total amenities found in block group households with cars and block groups households with no car. Figure 4.4.12 matches well with the results in Figure 4.4.10, where there are more bus stops in block groups where there are more households with no cars. Figure 4.4.11 shows more amenities in these same areas, although according to Figure 4.4.12, there are fewer high amenity bus stops in these block groups.

Figure 4.4.13: Bus Stop Counts and Percentage of Poverty Population: Seattle, WA

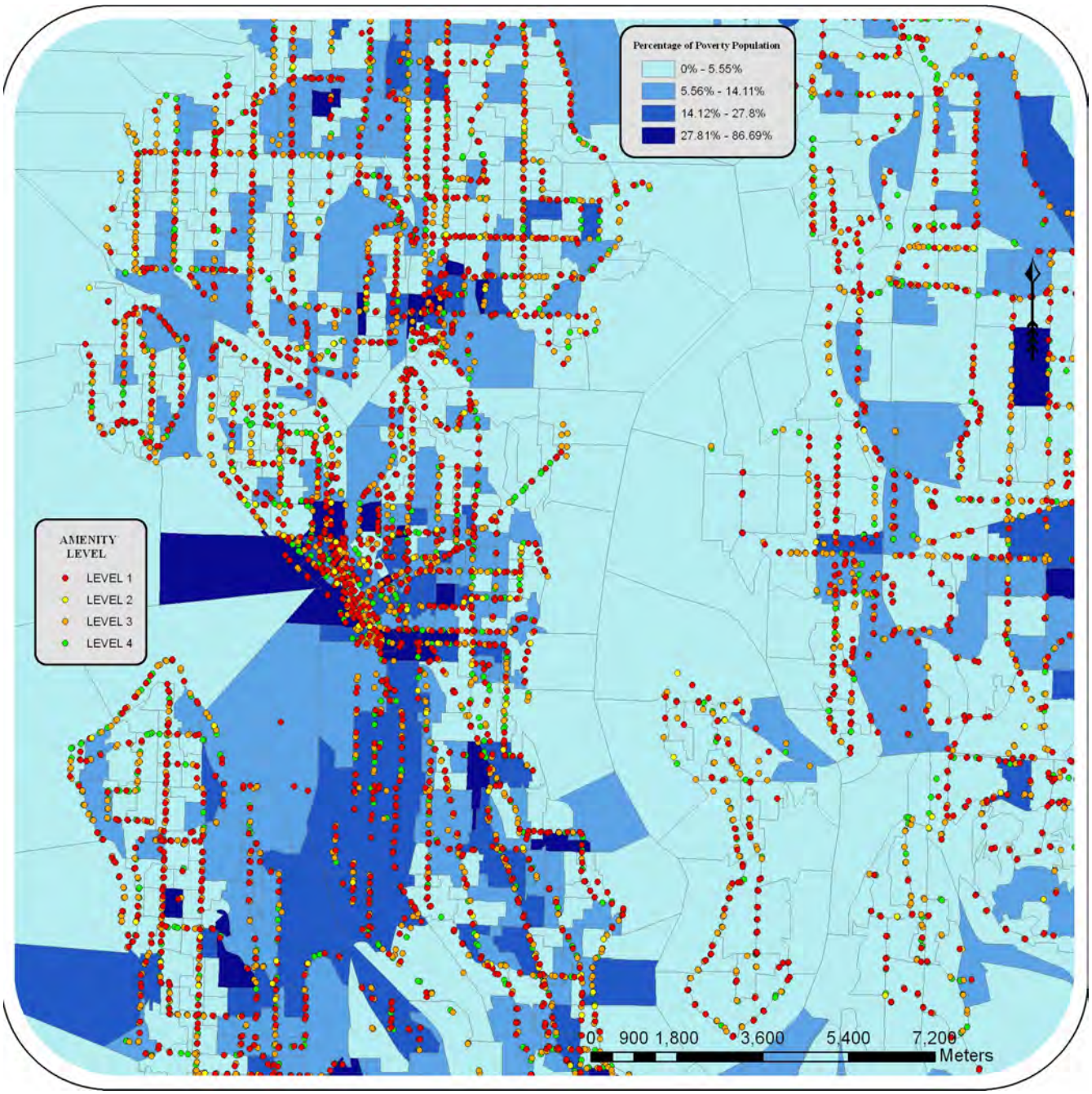


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.13 represents bus stop counts and the percentage of poverty population by block group. Of the seven block groups containing the highest bus stop count, one falls in areas with the highest poverty population and another falls inside areas of the second highest poverty population. There are also numerous medium to high bus stop counts in the other block groups with higher poverty populations. Overall, there appears to be more bus stops in areas of higher poverty populations. Again, if one were to assume that this population will rely more on public transit, there should be a greater number of bus stops in these areas.

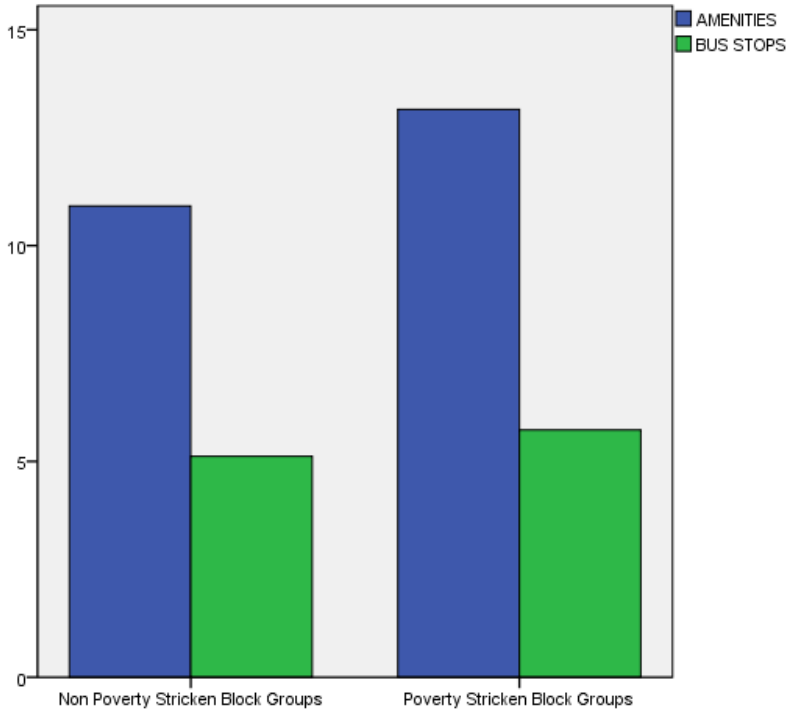
Figure 4.4.14 represents amenity levels and the percentage of poverty population by block group. In the areas of the highest and second highest poverty populations, there are only twenty-five amenity level 4 bus stops out of the total 1661 for the city. There are fifty-six amenity level 3 bus stops in these same areas out of the total 3154 for the city. There are a total of 189 bus stops in these same areas, which means less than half of these bus stops are amenity level 4 and amenity level 3. The majority of the bus stops with higher amenities are in areas with lower poverty populations. According to transportation equity, the minority population should be treated with the same amenities as the rest of the population and this is not the case here.

Figure 4.4.14: Amenity Levels and Percentage of Poverty Population: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

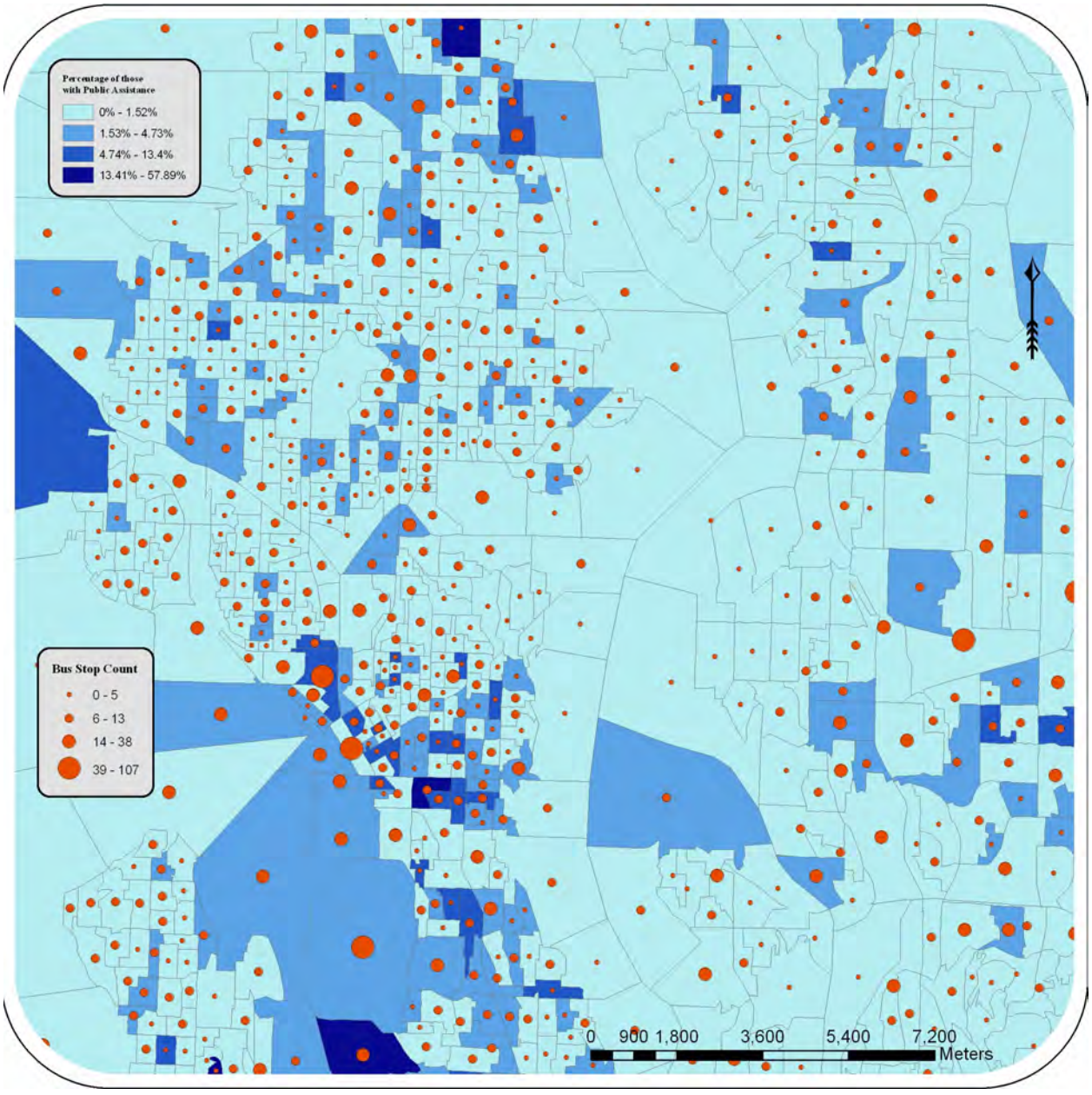
Figure 4.4.15: *Poverty Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.15 is a bar graph showing bus stop counts and total amenities found in block groups without poverty and block groups with poverty. Figure 4.4.15 shows that there are more bus stops in block groups with poverty versus those without, although not by much. Figure 4.4.15 also shows more total amenities in block groups with poverty, although Figure 4.4.14 resulted in fewer bus stops with high amenity level in these locations.

Figure 4.4.16: Bus Stop Counts and Percentage of Population with Public Assistance: Seattle, WA

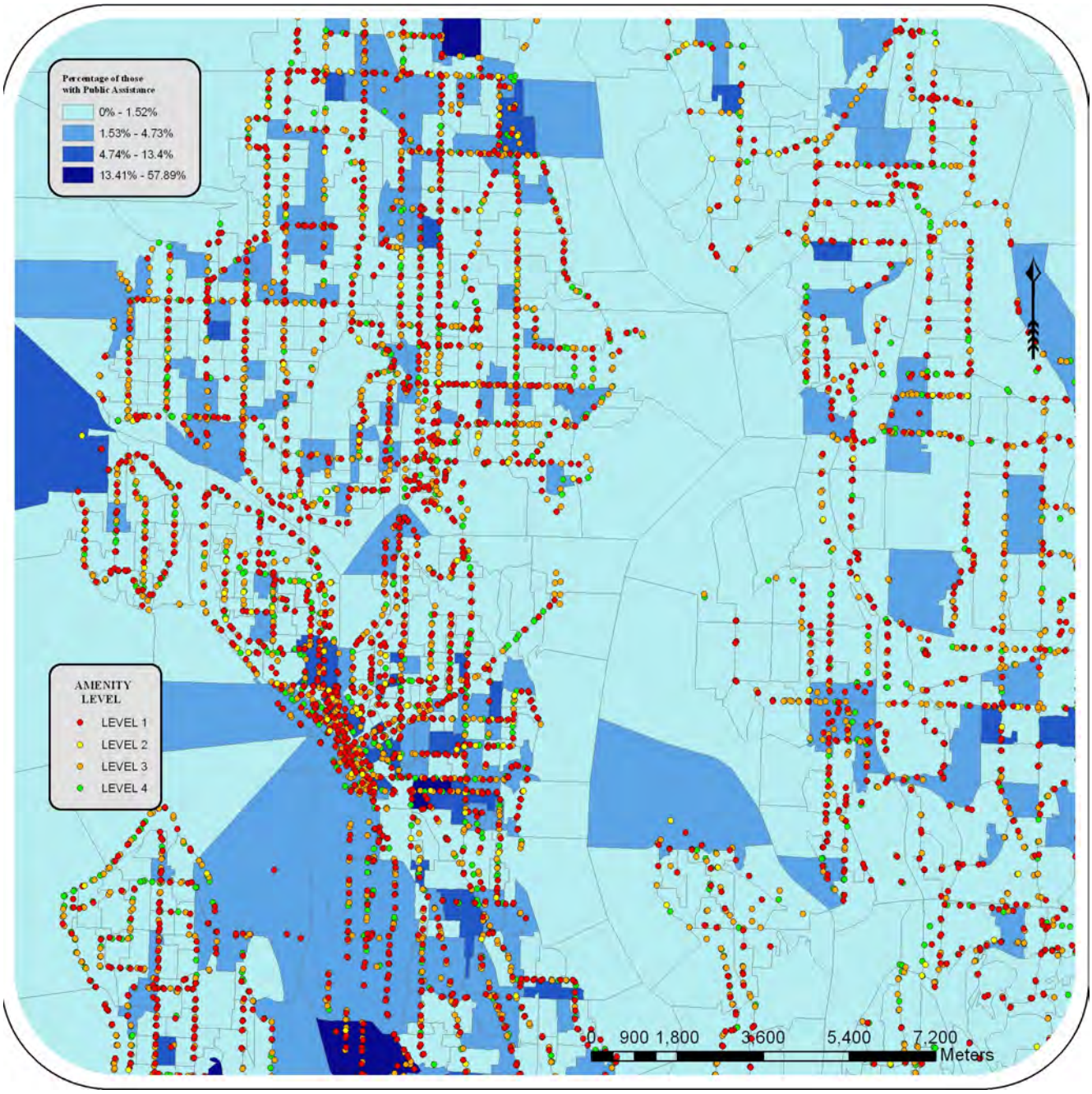


Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.16 represents bus stop counts and the percentage population receiving public assistance by block group. Of the seven block groups containing the highest bus stop counts, none fall inside areas of the highest public assistance population, although two are in areas of the second highest public assistance population. For the rest of the areas with the highest population with public assistance, there several moderately to high bus stop counts. This is the same for areas with the second highest population of those receiving public assistance. Although there are a couple of areas with the lowest public assistance population containing high bus stop counts, there seems to be an overall unfair dispersal of bus stops throughout considering this is a population who may use or need public transit more.

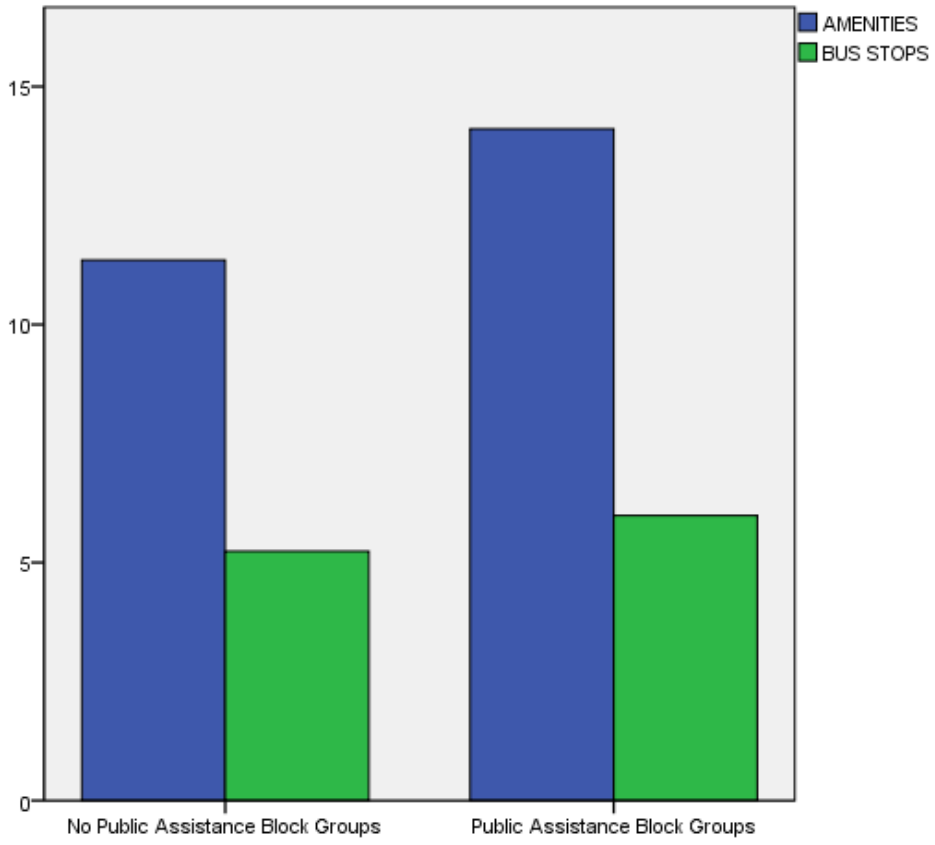
Figure 4.4.17 represents amenity levels the percentage of population receiving public assistance by block group. In the areas with the highest population on public assistance, there are only nine amenity level 4 bus stops and twenty-three amenity level 3 bus stops. There are a total of fifty-seven bus stops in these areas which means that over half of the bus stops are level 4 and level 3. Of all the demographics shown for Seattle, persons on public assistance is the only one with more than half of the bus stops in the highest category to have high amenity levels. The same goes for the areas with the second highest populations of public assistance. Over half of the bus stops there are of high amenity levels. Although the majority of amenity level 4 bus stops fall inside areas of lower to lowest public assistance populations, at least the bus stops that are in the areas of need have seem to have a fair distribution of high amenity level bus stops.

Figure 4.4.17: Amenity Levels and Percentage of Population with Public Assistance: Seattle, WA



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.18: *Poverty Block Groups in Relation to Bus Stop and Amenity Locations*



Source: US Census Bureau, 2000; KCMT, 2009

Figure 4.4.18 is a bar graph showing bus stop counts and total amenities found in block groups without public assistance and block groups with public assistance. The results in Figure 4.4.18 coincide with those in Figures 4.4.16 and 4.4.17 where more bus stops and total amenities fall inside than outside block groups with higher public assistance populations.

4.5 Amenities and Bus Stops in Relation to Transportation Equity: Are they associated with the areas of socio-economically disadvantaged group of people?

Now that we have analyzed the transportation equity aspect of the spatial relationship of bus stop locations and amenities, a statistical technique is needed to test the hypotheses that are stated in the methodology section. The Pearson's correlation coefficient is used to determine whether there is any association between number of bus stops and amenities with selected socio-economic variables, bus rider commuters, disabled, minorities, no car households, poverty stricken, and those on public assistance at block group levels. PASW 18 software is used to run spearman correlation coefficient for this analysis. Table 3 shows the results by each city.

Table 3: Correlations between Socio-Economic Variables, Ridership, Amenities, and Bus Stop Counts

		AMENITIES	BUS STOPS
GREENSBORO	MINORITY	.363**	.389**
	DISABILITY	.119*	.142*
	POVERTY	.255**	.284**
	PUBLIC ASSISTANCE	.204**	.215**
	NO CAR HH	.373**	.359**
	BUS RIDER COMMUTERS	.303**	.306**
KANSAS CITY	MINORITY	.227**	.339**
	DISABILITY	.100**	.212**
	POVERTY	-.010	.105**
	PUBLIC ASSTANCE	.133**	.254**
	NO CAR HH	.043	.078**
	BUS RIDER COMMUTERS	.278**	.440**
SEATTLE	MINORITY	.170**	.123**
	DISABILITY	.129**	.101**
	POVERTY	.144**	.103**
	PUBLIC ASSISTANCE	.093**	.077**
	NO CAR HH	.214**	.180**
	BUS RIDER COMMUTERS	.197**	.168**

***Significant at P=.01; * Significant at P=.05*

Sources: US Census Bureau; GTA, 2009; KCATA, 2009; KCMT, 2009

First, Greensboro will be examined to find any relationships between the number of bus stops and their total amenities with the selected socio-economic variables. We can see that there is a positive correlation between all demographics and amenities for Greensboro with the highest between no car households at .373 and minorities at .363. The rest of the demographics all have positive relationships with amenities as well. The next examination is between bus stop counts and the demographics. Just like with amenities, there is a positive relationship between all variables. The highest relationship is with minorities at .389 and no car households at .359. The results do not exactly seem to correspond to the spatial relationship on the maps of amenity levels; although, most of the bus stop counts on the maps do seem to relate to the findings in Table 3. One reason these amenity results don't quite match with those on the maps is because the maps looked at amenity levels where these results summed total amenities in each block group. Overall there seems to be a high relationship between the demographics and bus stop counts for Greensboro according to Pearson's correlation coefficient. This could possibly mean that there are many bus stops in these demographic areas, but not enough amenities.

Next, Kansas City is examined to find any relationship between bus stop amenities and socio-economic variables. The correlations between amenities and the socio-economic variables is quite lower than those of Greensboro which does match with the map results given Kansas City has a fewer amenities and lower amenity levels. In general there seems to be a high relationship between the socio-economic variables and bus stop counts for Kansas City according to Pearson's correlation coefficient. Each variable has a much higher relationship with bus stops than amenities. As was the case in

Greensboro, this could possibly mean that there are many bus stops in these disadvantage group areas, but not enough amenities.

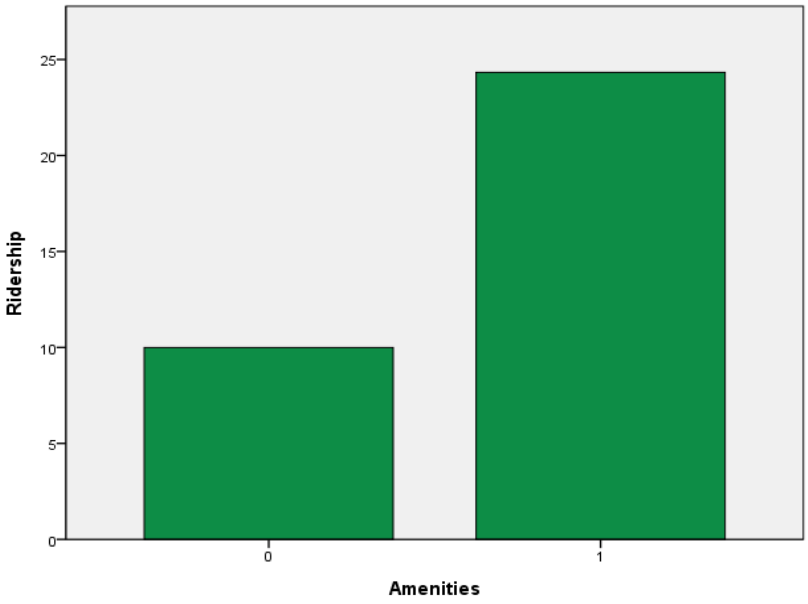
Lastly, Seattle is examined to find whether there is any relationship between bus stops and amenities and the selected socio-economic variables. In the category of bus stop counts and the socio-economic variables, just like in Greensboro and Kansas City, they all have positive relationships. The highest relationship is with no car households at .180 and second highest with commuters who ride bus at .168. Seattle's results are much different than those of Greensboro and Kansas City. This could be because overall they have more amenities and more concentrated amounts of bus stops in each block group. This can be a trend to pattern a transit implementation after for up and coming metro areas trying to expand their transit systems.

After analyzing the results of Table 3 in comparison to the results found in the maps, there were definite trends. There does seem to be a fair distribution of bus stops and amenities in the populations of the transportation disadvantaged. There is statistical significance that high bus stop counts and amenity counts are related to the socio-economic and disabled communities. Although these results signify a fair and even allocation of said bus stops and total amenities, there is still a lack of bus stops with high amenity levels in these same areas. If we assume that these populations need the bus system as much if not more than others, they should be served with bus stops with higher amenity levels

4.6 Do Amenities Increase Ridership and if so, what amenities are the most important factors associated with predicting bus ridership?

Now that this research has analyzed the transportation equity aspect of amenities and bus stop locations, a series of tables and graphs will answer the question asked: Do amenities increase ridership? An examination of amenity levels in relation to ridership, as well as each individual amenity in relation to ridership will be analyzed in this section to determine if these two variables affect each other positively. This analysis is being conducted at the bus stop location data, not blockgoups level.

Figure 4.5.1: Amenities and Ridership: Greensboro, NC



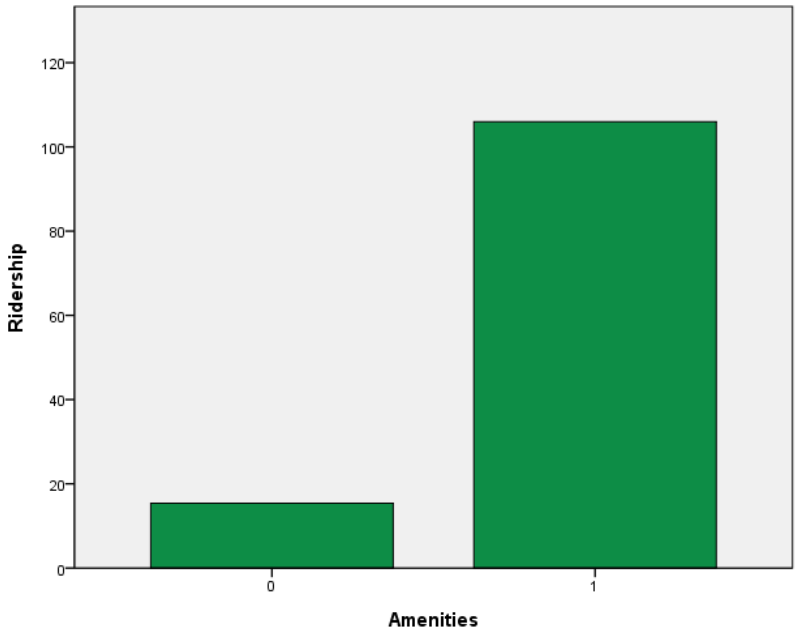
0 = No Amenities

1 = One or more amenities

Source: GTA, 2009

Figures 4.5.1 through 4.5.3, were created through PASW Statistics 18 software and shows ridership by amenities for each city. Figure 4.5.1shows Greensboro ridership data by bus stop locations with either no amenities (0) or one to numerous amenities (1). Here no amenities means with a sign only. There is a significant increase in ridership (more than double) at bus stops with amenities compared to those without amenities.

Figure 4.5.2: Amenities and Ridership: Kansas City, MO



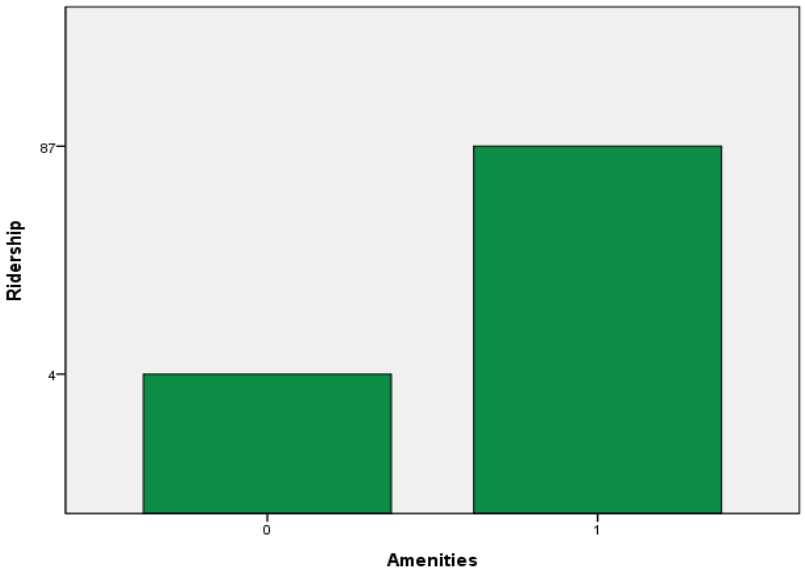
0 = No Amenities

1 = One or more amenities

Source: KCATA, 2009

Next, like in the Greensboro case study, Figure 4.5.2 is shows ridership data by bus stop locations with either no amenities (0) or one to numerous amenities (1). There is a significant increase in ridership (quadruple) at bus stops with amenities compared to those without amenities. This is evidence that more amenities at bus stops produce higher ridership.

Figure 4.5.3: Amenities and Ridership: Seattle, WA



0 = No Amenities

1 = One or more amenities

Source: KCMT, 2009

Figure 4.5.3 shows ridership levels by the amenities for Seattle. Just like in the Greensboro and Kansas City case studies, Figure 4.5.3 is a graph showing ridership data by bus stop locations with either no amenities (0) or one to numerous amenities (1). There is a significant increase in ridership (more than double) at bus stops with amenities compared to those without amenities. This is more evidence that more amenities at bus stops produce higher ridership

Next, an examination of relationships between ridership and each individual amenity, as well as total amenities, is observed in Table 4, representing a one-tailed bivariate correlation table using Pearson's correlation coefficient. Each city listed different numbers of individual amenities. For Greensboro, there are numerous significant correlations. There is a positive relationship between total amenities and bus riders at the .121 level. Of bus riders and individual amenities, the two highest positive relationships are lighting at .247 and shelter at .251. All other amenities have positive relationships as well: benches at .188, trashcans at .098 and ADA at .067. This is more confirmation that more amenities and increased ridership affect each other.

Just as in Greensboro, there are significant positive correlations in each category for Kansas City. Total amenities have the highest positive correlation at .406 (the highest relationship for any category in Table 4). The individual amenities have positive correlations as well: trashcans at .359, shelters at .345, and benches at .124. Again, these relationships help support the case that more amenities and increased ridership affect each other.

In Seattle, there is a significant correlation between bus riders and amenities at the .266 level, although not as high as for Kansas City. The highest positive correlation between individual amenities and bus riders were shelters at .373 and awnings at .128. There is also a small correlation with signs at .055 and ADA at .050. Although there were not as many individual high positive correlations as those in Greensboro and Kansas City, it still provides confirmation that overall, more amenities provide more riders. Of

all the individual amenities, shelter had a very high relationship with ridership for all three cities.

Table 4: Correlations between Amenities and Ridership

		RIDERSHIP
GREENSBORO	AMENITIES	.121**
	TRASH	.098*
	LIGHTING	.247**
	ADA	.067*
	BENCH	.188**
	SHELTER	.251**
KANSAS CITY	AMENITIES	.406**
	TRASH	.359**
	SHELTER	.345**
	BENCH	.124**
SEATTLE	AMENITIES	.266**
	BOLLARDS	.004
	NEWS BOX	.023*
	BIKE RACK	-.002
	ADA	.050**
	SIGN	.055**
	SHELTER	.373**
	SIDEWALK	-.001
	LANDING	.007
	AWNING	.128**

***Significant at P=.01; * Significant at P=.05*

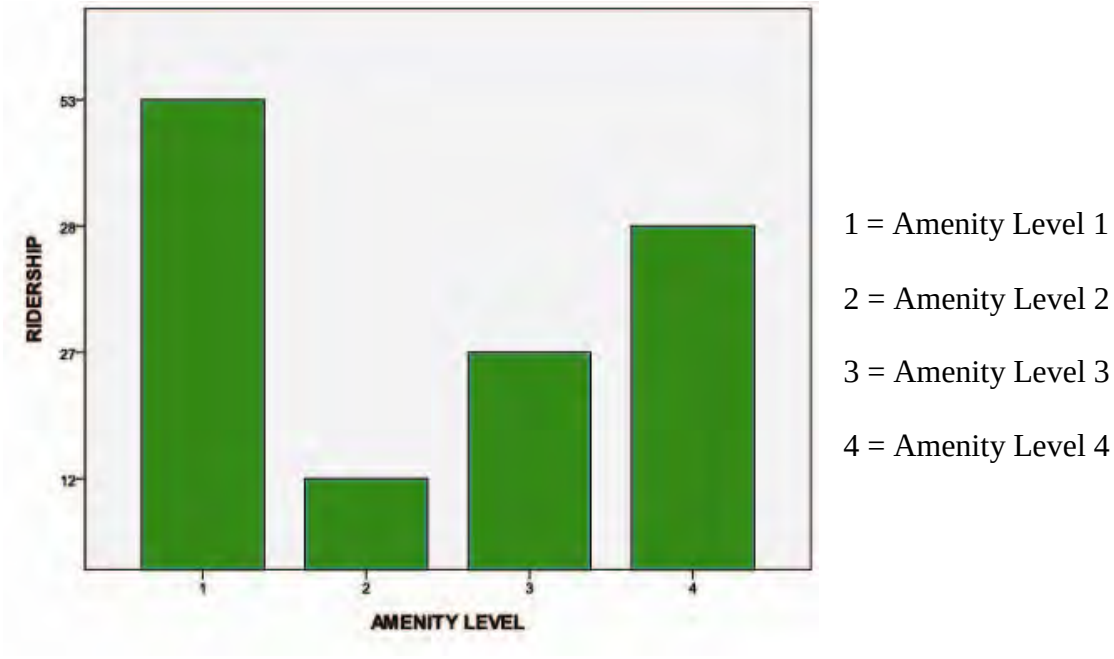
Sources: GTA, 2009; KCATA, 2009; KCMT, 2009

4.7 Does the lack or different level of amenities at each bus stop affect ridership levels in a significant way?

Now, relationships between amenity levels and ridership will be examined through a series of graphs, with a categorical analysis. There is already evidence in the prior figures that bus stops with one to numerous amenities greatly increase ridership versus bus stops with no amenities. Now bar graphs (Figures 4.5.4 through 4.5.6) will examine if different amenity levels will influence ridership accordingly. The amenity levels used here are the same criteria as those in the map section and explained in Table 1. Once again, this analysis is being conducted at the bus stop location data, not blockgoups level.

Figure 4.5.4 shows Greensboro's amenity levels and ridership. There is greater ridership with amenity level 1 than level 4. This could be due to the fact that the majority of bus stops in Greensboro have amenity level 1 and people have to use them regardless. On the other hand, ridership is the lowest at amenity level 2 and doubles at level 3 which also doubles with level 4. Although there is an anomaly with level 1, ridership otherwise increases greatly as the amenity level increases.

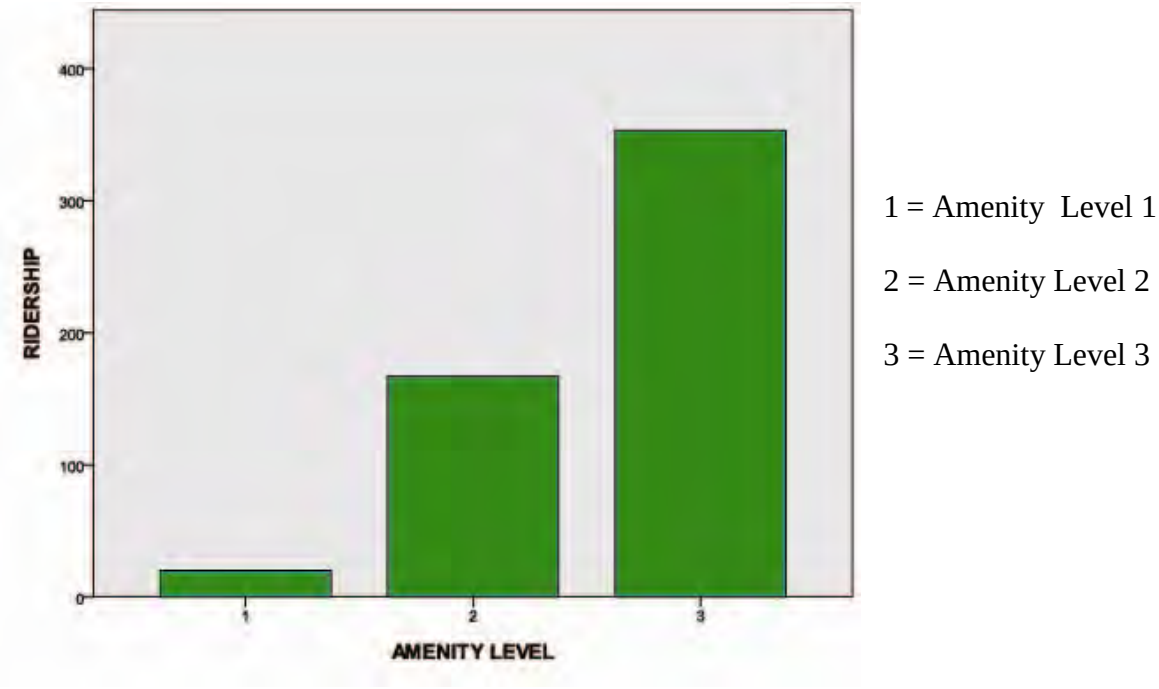
Figure 4.5.4: Amenity Levels and Ridership: Greensboro, NC



Source: GTA, 2009

Figure 4.5.5 shows Kansas City's amenity levels and ridership. Although Kansas City had no level 4 bus stops, the ridership for each amenity level increases as the level increases, which goes to show if they had any level 4 bus stops, the ridership would likely increase for those stops as well. Level 1 has the lowest ridership and quadruples with amenity level 2 and quadruples again with amenity level 3. This is more evidence that the better the amenities, the more ridership will increase.

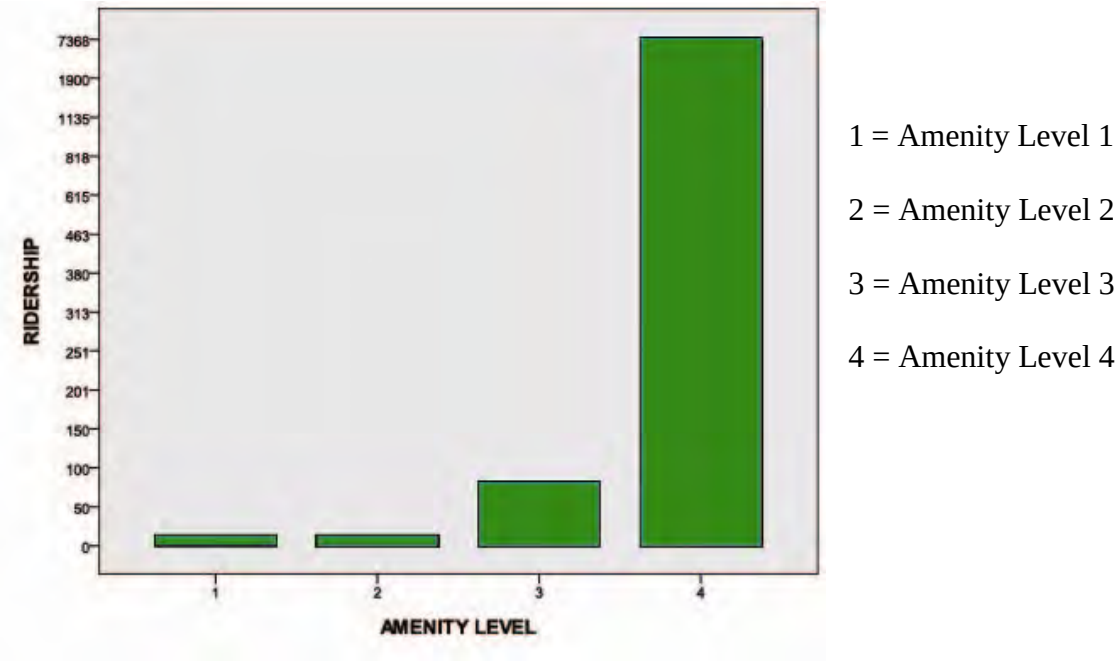
Figure 4.5.5: Amenity Levels and Ridership: Kansas City, MO



Source: KCATA, 2009

Figure 4.5.6 shows Seattle's amenity levels and ridership. The evidence in this graph is overwhelming. Ridership at amenity levels 1, level 2, and level 3are minute in comparison to the ridership at level 4. The ridership at level 4 is almost six times the ridership at level 3. Again, this is only more confirmation that better and more amenities at a bus stop will certainly increase ridership.

Figure 4.5.6: Amenity Levels and Ridership: Seattle, WA



Source: KCMT, 2009

One-Way ANOVA Post Hoc Analysis was performed to test whether each level of bus stop amenities generates different level of ridership and whether these differences are statistically significant. The assumption of equal group of variance is required to run ANOVA. Therefore, the Levene test was performed to test the assumption of equal group of variance and Tamhane test was performed when Leven test was significant or the assumption of equal variance were not met. Table 5 shows the One-way ANOVA Post Hoc Analysis for three cities that this study is conducted.

Table 5: One-Way ANOVA Post Hoc Analysis

	Greensboro	Kansas	Seattle
Amenity level comparisons at bus stops	Mean Differences in Ridership		
Level 1 and Level 2	40.2975905	-146.890*	-.893*
Level 1 and Level 3	25.6587172	-332.851*	-33.499*
Level 1 and Level 4	25.2267162	NA	-387.725*
Level 2 and Level 3	-14.6388733	-185.960*	-32.605*
Level 2 and Level 4	-15.0708743	NA	-386.832*
Level 3 and Level 4	-.4320010	NA	-354.227*

**Significant at p=.01*

Sources: GTA, 2009; KCATA, 2009; KCMT, 2009

In Greensboro, ridership is higher for bus stops with level 1 amenities compared with higher level of amenity service. Level 2 has the lower ridership than level 3 and there is a difference between level 3 and 4 amenity level. However, all these differences are not statistically significant. Therefore, even though it appears that bus stops with lower amenity levels have higher ridership in Greensboro, this is not conclusive that lower level of amenities bus stops is positively associated with more ridership.

However, Kansas and Seattle have different outcomes as expected. In Kansas, Bus stops with level 1 amenities have average 147 less ridership than bus stops with level 2 amenities, and level 1 amenity bus stops have average 333 less riders compared to bus stops with level 3 amenities. Similarly, Level 2 amenity bus stops have average 186 riders compared to level 4 amenity bus stops. All these differences in ridership are statistically significant in Kansas City. Seattle has the similar patterns: bus stops with level 4 have average 354 more riders than bus stops with level 3 amenity services and level 2 generate average 387 riders compared to the bus stops at level 2 services. Although there is not much difference in ridership between bus stops with level 1 and 2 amenity services, bus stops with level 1 amenities has average 34 ridership compared to bus stops with level 3 amenities, and has 388 less riders to bus stops with level 4 amenities. All these differences are statistically significant in Seattle as well. Based on Kansas City and Seattle's One-Way ANOVA Post Hoc analyses, it can be generalized that bus stops with higher level amenity services have average higher level of ridership. In other way of saying is that different level of amenities at each bus stop affects ridership levels in significant way.

Although Kansas City and Seattle proved a significant increase in ridership with higher amenity levels, Greensboro seemed to fail in this regard. There could be varying reasons for this outcome. The first and obvious explanation could be the size of each city. In general, the larger the metro population is, the more expansive the bus system will be. Greensboro, being a smaller metro area has significantly less bus stops and a much smaller bus system than Kansas City and Seattle, therefore, the ridership numbers are far less as a whole and prove to be not as significant. Another factor could be the geographical location of each area. Each metro area is not only geographically different, but culturally as well. Greensboro is a smaller southern city, Kansas City a larger Midwestern city, and Seattle a large west coast city. The trend towards better public transit usually tends to start in places with larger populations and better economies.

CHAPTER V

SUMMARY, DISCUSSION, AND CONCLUSION

This thesis examines the spatial distributions of bus stop amenities from the perspective of transportation equity to determine whether they are being located in areas where they are needed the most as well as to analyze their amenities or lack thereof and the effect they might have on ridership. Several questions are examined. The first question was whether the locations of bus stops and their amenities were distributed evenly across areas to serve everyone and if they are located in areas and communities where the demographic trend leans towards a greater need for transit, especially the transportation disadvantaged such as lower income and minorities. The other question being discussed is whether disabled people being served equally by the transit system. After the thorough examination of the spatial aspect as well as the statistical analysis to answer these questions, a conclusion was met.

The maps as well as the statistical analysis show a fair distribution of bus stops in areas of the transportation disadvantaged with few exceptions. Groups such as minorities, poverty, bus users, no car households, and people with public assistance, were met with a higher number of bus stops than areas of low populations of these variables. Overall, the total amenities were also located in these places of need. Although there is a fair distribution of total amenities, there is a lack of bus stops with high amenity levels in these same areas. In most cases, few of these bus stops had more than one amenity,

giving it a lower amenity level. There seems to be higher amenity bus stops found in areas where fewer commuters ride the bus, no poverty zones, or in areas with the lowest minority population. This may happen because neighborhood associations or other types of entities that can use their power and sway to receive better amenities only for aesthetic purposes. These areas might look more appealing but in some cases they are not practical. This can also be the case for areas near a new high-end, mixed-use development that wants aesthetically appealing bus stops, but in reality the residents might not use the bus, as least based on mode of commuting data. In prior observations in Greensboro, the author has seen more people waiting at bus stops in low income areas, and most of the time these people aren't sitting on a bench under a shelter but rather standing under a light pole with a sign. There were block groups shown in the maps with high amenity levels in areas where they are needed, but there were also many other low amenity block groups in the same areas.

The same goes for areas of the disabled population. There is a fair distribution of bus stops where the disabled live, but high amenity levels are lacking. This is unfortunate since high amenity levels (level 4 and level 3) are the only two level containing ADA approved but stops. There were some exceptions, but too few. Seattle has significantly more amenity level 4 bus stops where Kansas City had no level 4 bus stops. For most cities, it is not too late to rethink their transit system plan to meet the needs of transportation equity so all populations can be served equally especially those in need of more and better transit options.

The other questions examined in this research are related to ridership: whether the amenities of bus stops have an effect on overall ridership and if so, which amenities are the most important factors for predicting bus ridership and whether bus stops with higher level of amenities associated with more ridership. In each case study, there is overwhelmingly higher ridership where there are more amenities. There is also a high statistical relationship with total amenities and ridership. The most important amenity that factors in with higher ridership is shelter. Bus stops with shelter have a higher statistical relationship throughout. Amenity levels also factor in to ridership levels. In Kansas City and Seattle, ridership increases with the amenity levels. Amenity levels and ridership were statistically significant for these two cities. Greensboro had the most ridership at level 1 amenities, but level 3 and level 4 had much higher ridership than level 2. This could be due to Greensboro having the majority of their bus stops at level 1 and being a smaller city. Greensboro's bus system is not as expansive and is not used as much as Kansas City or Seattle. Greensboro's expansive urban sprawl may also have an effect on this aspect as well. Since higher amenity levels do increase ridership, there is a definite need for more amenities at more bus stops. Each city had significantly more of their total bus stops designated with lower amenity levels.

The findings in this research suggest that it is worth the time and funding for agencies to undertake studies to implement amenities because amenities do affect ridership. In each case study, there was a significant relationship and an increase in ridership at bus stops with more amenities. It is overwhelming how much ridership increases when more amenities are present. Although the findings do suggest the

relationship is significant, there is still a need for more research to determine if the ridership or the amenities came first. Many agencies did not keep automated passenger counts decades ago when the first amenities were implemented. There needs to be a continuous study by the transit agencies to monitor ridership before and after a new amenity is installed. Also, other factors need to be researched in the future that could have effects on ridership such as pollution, crime rates, route factors etc. This needs to be a continuous study so that eventually all transit agencies can strive for a more fluid, accessible, comfortable, and safe bus system.

So, what are the policy implications for this research? There is renewed interest in transit systems striving to maintain and increase ridership by enhancing all stages of the transit experiences by improving vehicle design characteristics and providing amenities (Adelson, 2008). These findings will not only help the transit authorities to recognize that more and better amenities are a driving force for equality, but it can also help them understand that better amenities will unquestionably produce more ridership which can produce more revenue for the transit agency. If transit agencies were aware of these finding, they may have more incentive to implement more amenities which may end up helping the cause of transportation equity, if it is done correctly and justly.

The transit agencies need to maximize the effect of investments by focusing resources on those amenities that will have the greatest positive effect on ridership (TCRP, 1999). A transit agency may have certain ideas and incentives for certain locations and designs of bus stops, but they often have to meet the needs of other government agencies and organizations (Smart et al, 2009). An ideal map (hopefully

available in the future) would have equal amenities and bus stops throughout all areas. Amenities not only reward those who already use the bus, but can also help recruit those who don't.

Usually the design decisions are made by engineers and maintenance departments in which neither is usually trained to understand passenger needs (TCRP, 1999). That is one reason it was such a burden to obtain data from transit agencies. There is no uniform that ridership and amenity data has been kept and maintained. Each agency kept records in a much unorganized and unsystematic manner. Instead of dividing local Departments of Transportation into transportation engineers and transportation planners, the author suggests combining the two so that sensible decisions can be made and funding is not wasted on amenities in areas where they are not appreciated or used.

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Rider Report
September Board Meeting Report
John Layton

August Data

Fixed Route Highlights:

- 20,612 people used fixed routes in August for an average of 664.9 riders per day.
- 1.7% increase in average passengers who rode fixed routes per day from last August (653.6 to 664.9)
- 10.6 people per hour, on average, got on any fixed route at any time that the bus runs in August. 3% decrease (10.3 to 10.6) from last August.
- 2.9% increase in the ratio of elderly/disabled riders from last August (19.0 % to 18.6%)

RideAssist Highlights:

- 1,176 rides were provided by RideAssist in August for an average of 39.2 rides per day.
- 1.6% increase in average RideAssist passengers per day from last August (38.6 to 39.2)
- 17.5 % increase in all ADA Paratransit rides from last August (627 to 737)

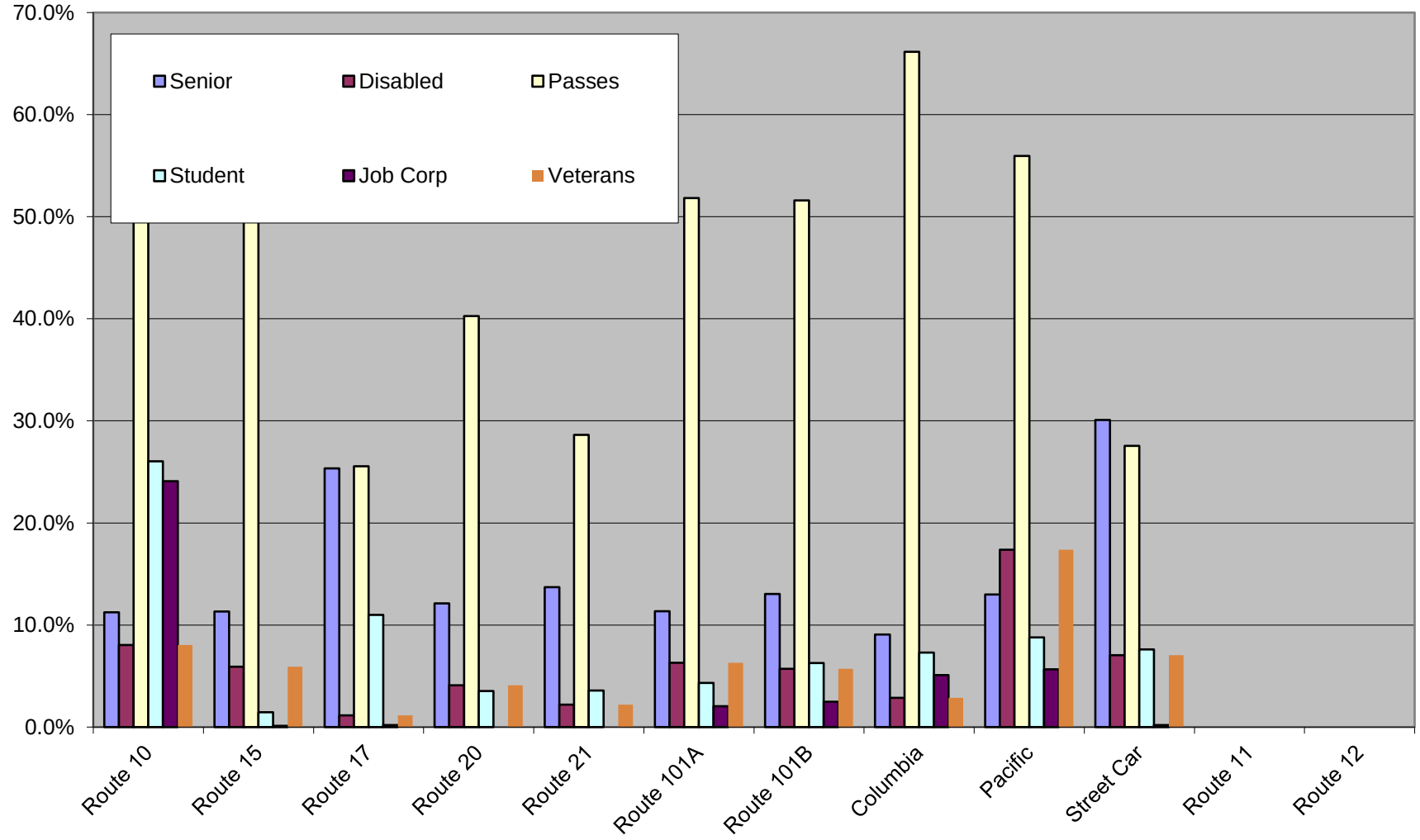
System Highlights:

- 21,788 people used Sunset Empire Transportation in August for an average of 702.8 riders per day.
- 2.8 % increase in all average passengers per day from last August (683.7 to 702.8)

Transit Center Highlights:

- 977 calls received by the Astoria Transit Center in August for an average of 31.5 calls a day.

Rider Report
September Board Meeting Report
John Layton



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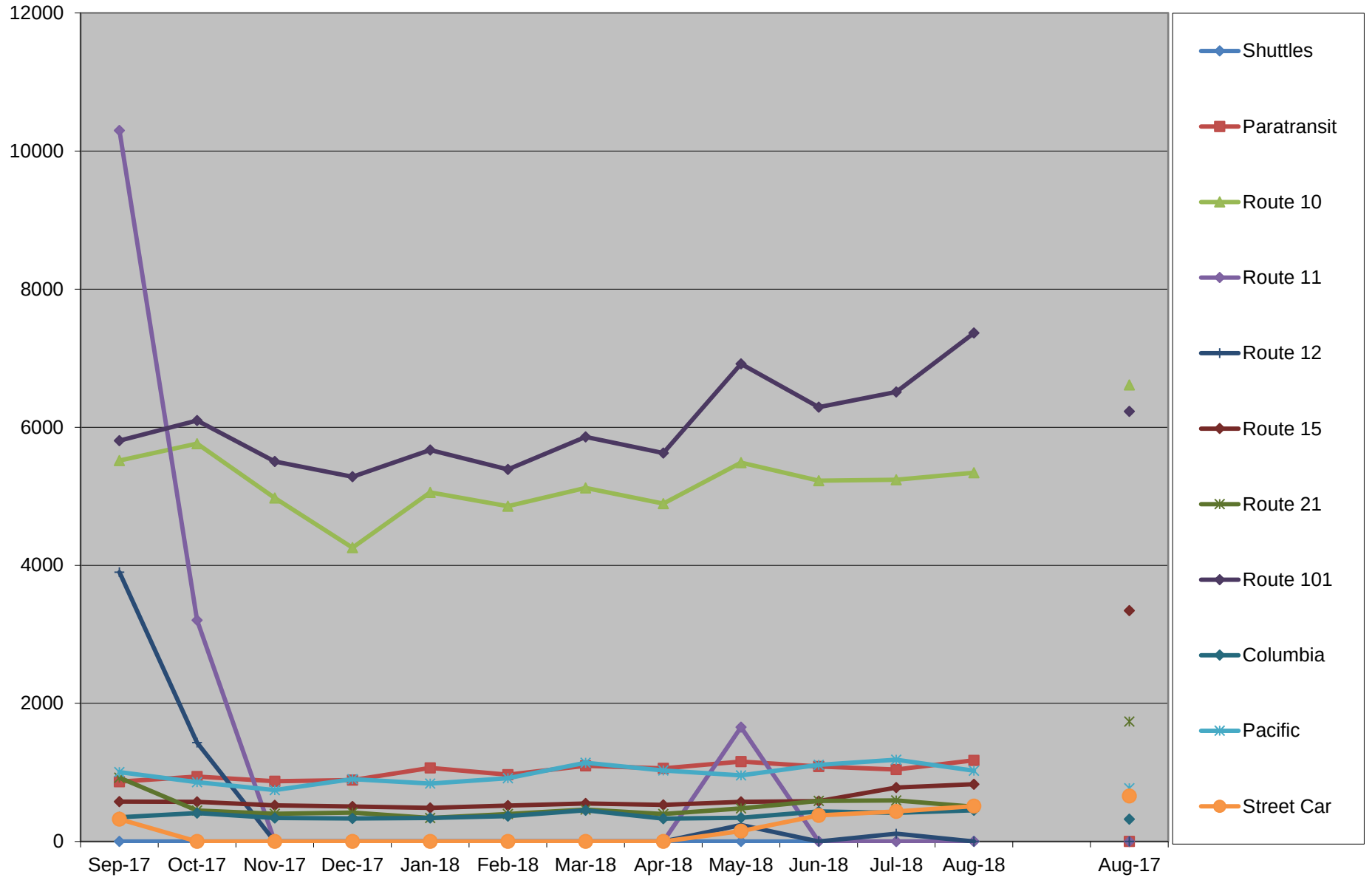

Operations Monthly Reports – September 2018

We continue our recruitment efforts for bus drivers, but high employment numbers in the region make applicants few and far between. We will be using a third party tester to test our newest driver, Rose Ominski. Upon passing her CDL skills test, Rose will take her place with the rest of our drivers serving Clatsop County riders and helping to reduce overtime expenses.

I attended the Zero Emissions Bus Conference (ZEB) in Los Angeles. The conference has become an annual meeting of those interested in the electrification of their bus fleets. Both Battery Electric Buses (BEB) and Hydrogen Fuel Cells are prominent technologies driving electrification. Bus service providers, electric bus manufacturers and electric utilities were in attendance. The thrust of the conference was planning; planning for an infrastructure, planning for maintenance, and planning through an effective relationship with local utilities. The conference was standing room only.

The Safety Committee has made its recommendation for SDAO's safety grant application this year. The committee members are recommending a panic button for the silent alarm at the Transit Center. With an eye toward safety and security, such a device would ensure quicker notification and quicker response to any dangerous situation with might occur, especially during evening and weekend hours, at the TC.

Operations continues to evaluate software for dispatching ADA rides through our paratransit group. Discussions are ongoing with Tillamook County Transportation District and Northwest Rides exploring the possibility of leveraging their software license with Ecolane (TCTD's dispatch software) to support our ADA and Medicare rides. This would mitigate the expense of buying a license outright and would allow us to work with the same environment as Northwest Rides resulting in what is hoped to be a more efficient use of resources. However, evaluation continues to find the best solution.

Through the efforts of Scott Smith, our Maintenance Supervisor, we were able to complete some work to refresh our parking lot. Over the past few months, Scott has managed the repair of trash cans and smoking receptacles in the plaza, as well as replacing some faded signage and restriping and re-stenciling the parking places and bus route designations. This improves the appearance of our facility, while more clearly communicating important parking and rider information.

Our fleet continues to experience some expensive repairs. As we work to reduce the average age of our fleet, we can expect our older buses to require costly repairs. We are working to bring some of the work we normally send out back in house. This will require finding and hiring two Mechanic Assistants. Recent efforts have failed to meet this goal.

Operations is working with CC Rider management to identify some schedule changes which will help to overcome the intercity grant funding issue while preserving the highest sustainable service level for our riders between the coast and the valley.

RIDE ASSIST
September 2018 Report
Jennifer Geisler

- August 2018, RideAssist had a total of 1173 rides for an average of 39 rides per day. There were 737 ADA rides, 6 Dial-A-Ride, 115 PCA's and we provided 315 Medicaid rides for NorthWest Rides.

- There were 0 ride denials for ADA Paratransit rides.

- ADA Paratransit Report
  - Number of completed applications received:14
  - Number of incomplete applications received: 0
  - Number of interview/assessments scheduled: 0
  - Number of interview/assessments completed: 0
  - Number of determinations made:4
    - Within 21 days:4
    - More than 21 days:
  - Determination by type:
    - Unconditional:4
    - Conditional:0
    - Temporary:0
    - Not eligible:
  - Number of appeals requested: 0
  - Number of appeals heard: 0

RideAssist Fares Collected/Billed for August 2018

- Para-transit Fares: $832
- Tickets Collected: $593
- Medicaid Billed: $5410
- Ticket books sold: $528
- Dial-A-Ride Fares: $72

Mobility Manager
September, 2018 Mobility report
Jason Jones

- Completed the support role for the new brokerage at Tillamook by assisting mainly with the transition of old gas vouchers for our membership. Ride Care completed final payments for those with existing approved reimbursement thus completing the transition. As of this month, there are no further responsibilities we share with the new brokerage and will begin storing our records appropriately. I would like to personally thank everyone involved with helping make a difficult transition as smooth as it was, thank you!!

- After a vacation I have started to work my way into training for the position of Mobility Manager. I look forward to the new challenge in this field and for new network connections that I will be making in the near future as I learn the ropes.

- In September I have Been riding the routes as much as I have time for so I can become intimately aware of some of the mobility and accessibility challenges of our riders. I have also started to formulate the basis of how I will help them with well thought out travel plans and travel training.

- I'm very thankful for the availability of Jennifer, Paul and Tami as I start to navigate through the existing Paratransit membership and develop a process at re-assessing ADA Paratransit eligibility. Re-assessment is vital at ensuring that eligibility is kept current and those able to ride fixed route are indeed riding fixed route where/when applicable.

- I have been taking multiple training options provided through agencies such as: RTAP, ODOT Easter Seals, the National Center for Mobility Management and a Federal resource guide web-site called America Walks. I'm learning a lot with these resources and training being within such easy reach. Mary Parker has been guiding my training direction and has been so supportive and encouraging through the whole processes. The learning curve is great but I will be doing everything I can to put into practice whatever I can during this period of learning.

- I appreciate all the support that I have been getting from my co-workers and leadership as I work towards defining what Mobility Management is to SETD. I look forward to creating and maintaining short-range projects that foster good planning, travel training and managing activities that help improve community transportation coordination. I happy that I have the opportunity to develop strong and fruitful networks with social service agencies and private organizations as well work on strengthening our very own Volunteer driver's network here at SETD.

Outreach and Education
August 2018 Board Meeting Report
Mary Parker

Travel Training- Weekly travel training at Tongue Point Job Corp Center has been a lot more exciting lately as the class size has gone from 10 to over 20 and these kids are from all over the country. I have each student tell me their name and where they are from and I ask if they ever used public transportation? There is quite an age range but, so many say no they have not…even in the cities like Seattle or Washington D.C. Some actually have cars and they usually are a little indignant that they were not allowed to bring their car to Tongue Point, so they really don't want to even look at the schedules or know about where they can go and what they can see. Then there are the students that have used public transportation or are willing and interested and they waste no time in opening up the schedule and planning how they are going to go to the Tillamook Cheese Factory cause they just love cheese!! What fun it is to be part of this class...

The Veterans Outreach Program- We are continuing to deliver rack cards to service organizations, clinics and other outreach programs throughout area. Jason and I have met, and Mobility Management will be taking the lead in this program with volunteers and outreach.

The Transit App- I have made sure that all of our shelters have the new Transit App information for downloading and the phone number that can be called for real time bus location. I have also made sure that each shelter has the stop code location which is necessary when calling for bus locations.

New Posters and New Schedules- We received our new schedules and shelter posters which include the updated information about passes and several other updates. I have been busy distributing both throughout the county. The shelter stickers take quite a bit of time to remove and then clean and then reapply. The adhesive is waterproof and strong on the shelter maps so I often feel like I am going to pull the window out when removing them.

Clatsop Behavioral Health Presentation- I made an SETD Services presentation at the bimonthly meeting for CBH, ESD, and several other Rehabilitation programs and services. There were 9 program managers attending and many of their clients are users of public transportation and each one of the managers knew our routes well and had specific concerns about their clients. There were many questions and concerns about the new passes and not being able to purchase one for the year. They also had many concerns about our routes not reaching those that need the services and also not operating during the hours of service for the type of jobs that their clients qualify for. I was there for an hour and a half and did get all the way through my presentation. A second presentation is being planned and we will hopefully be able to address some of their concerns and needs then.

Resource Fair Warrenton Grade School- I participated in the Community Resource Fair held at the first Warrenton home football game. There was a good turnout of local community resources including the City of Warrenton, Warrenton Fire, Warrenton Police, Community Action, Parenting, Hispanic Council, SETD and several more. We each had a table on the sidelines right below the goal post, so we were very visible as all attending had to walk by us on their way to the bleachers.
It was a lot of fun to meet parents and their little ones that each got a flasher for being "Safe and Seen" this time of year and which are also useful on Halloween. I also gave out bike safety color books which the teachers really liked and pens which I was told were fantastic. I answered a lot of questions, discussed routes and assisted several people who were wanting to ride the bus but were worried about getting home and others who were just having difficulty making the schedules work for them. Presenters were also treated to free hamburgers which were delicious.

Mobility Management- Jason is doing an amazing job of reaching out, educating himself and laying the foundation for a wonderful Mobility Management program at SETD. His experience and his desire to help others is the bonus and I am very excited to be working with him and to see this program bloom!

Human Resource Report
September Board Meeting Report
Tami Carlson

- Mechanic Assistant recruitment resulted in few applicants. Duties of Lot Attendant/Bus Washer will be included in Mechanic Assistant job description. Jered Barnett was the Mechanic Assistant and quit the district in August. Postings and interviews for two Mechanic Assistants will continue until positions are filled.

- Interviews for fixed route bus drivers are ongoing. With the summer and cruise ship season, SETD is still in need of CDL drivers.

- August 20th attended the monthly safety committee meeting. The safety committee is currently recruiting for new committee members. Assisted in the Transit Center quarterly building inspection. There were minimal safety findings recorded for this quarter.

- August 21st submitted the annual SDIS Worker's Comp Audit, deadline August 24th.

- In-house posting for a Payroll/Accounting Clerk resulted in the hiring of Donna Buganan. Donna is the Billing Clerk for RideCare and will transfer into her new position September 1st. Congratulations Donna!

- Jason Jones, RC Manager will transfer into the Mobility Manager position in September. This will be a new role for Jason which the district believes he will be very successful. Congratulations Jason!

- Other projects – Continued training with GNSA on payroll and HR services; payroll training for new Payroll/Accounting Clerk.